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THE PUTUMAYO HORRORS.

FOR the last two weeks the press of London and of New York has devoted a great deal of space to the atrocities that have been committed on the rubber gatherers in the Putumayo district, and owing to the fact that these cruelties have come to light while the memory of the barbarities in the Congo region, under the late Leopold's regime, are still fresh in the public mind, there has been a tendency among some of the editorial commenters to impute to the rubber trade some special malign influence to which these atrocities may be attributed. The only malign influence connected with the gathering of crude rubber lies in the fact that it takes place in remote and inaccessible localities where there is a total absence of civil law, and where the only rule is that of brute force, whose insignia of authority are the rifle and the knife. Wherever these conditions obtain there is liable to be a reign of unrelieved brutality.

The Putumayo rubber district lies along the banks of the Putumayo River, one of the tributaries of the Upper Amazon. This territory has been claimed by Brazil, Peru, Ecuador and Colombia, but Brazil some time since withdrew its claim, and Peru has been most persistent in demanding the recognition of its sovereignty over this territory. Nearly twenty years ago some Latin Americans under the firm name of Arana Brothers, secured an exclusive concession from the Peruvian government to gather the rubber in this district. The company sent its agents, Latin Americans—not of the best type—to the Putumayo jungle, and there with their assistants, half-breeds and desperadoes generally, they started the gathering of rubber. They found there a number of exceedingly primitive Indian tribes, inoffensive, docile, singularly free from the vicious traits that aborigines often have, and untouched by the vices of a civilization that had not yet reached them. The first thing the invaders did was to despoil the natives of their weapons of defence, consisting largely of the native blow-guns, together with a few antiquated muskets that had found their way into that remote region; and then having them at their mercy the agents and their overseers plied them with every imaginable sort of cruelty to compel them to bring in the largest quantity of rubber. As the agents were paid in proportion to the amount of rubber produced, it was natural for men of their type to use all means—humane or inhumane—to make this amount as large as possible.

It is not necessary here to go into any detailed description of the horrors that were perpetrated. There is conclusive and overwhelming evidence that men, women and children were flogged, maimed, drowned, starved, beheaded, burned alive and buried alive.

In 1905, the firm of Arana Brothers, which had been gathering rubber for nine years, sold its concession to the Peruvian Amazon Company, a London corporation, having three Englishmen and four South Americans on the board of directors. The new company imported into the Putumayo district a number of Barbadian negroes to augment the band of overseers. These new recruits fell immediately into the methods of the camp, and soon became as barbarous as their predecessors, if not more so.

The first inkling that the world at large had of the appalling situation came from two young American engineers, Hardenburg and Perkins by name, who, after spending many months in the district, went to London in 1909 with the manuscript of a book entitled "The Devil's Paradise," wherein they had recorded the atrocities that they had witnessed. They found it impossible, however—so shocking were the disclosures—to get a London

publisher to produce the work; but some of the dailies printed it in part. The English government then sent one of its most trusted men, Sir Roger Casement, the British Consul General at Rio de Janeiro, to investigate the situation. He spent the summer and fall of 1910 in the district, and his report was made to the government in March, 1911. This report, substantiating every statement made by the two Americans, forms a record of the most brutal crimes practised upon the defenceless Indians, and extending over many years. The English directors pleaded total ignorance of the condition in their concession; but the English government, which had been so prominent in the international protest against the crimes of the Congo, naturally felt itself called upon to take immediate steps to suppress these equal horrors in South America, which had taken place in a concession held and operated by British citizens. But because of the peculiar relations maintained by the United States government towards all South American countries, by reason of the Monroe Doctrine, the British government first entered into correspondence with our State Department. This correspondence has been going on for a year. Our State Department, with a delicate regard for the feelings of the Peruvian government, which hardly seems to have been warranted under the circumstances, is alleged to have requested the British government not to publish Sir Roger's report until the Peruvian government had had time to take some measures towards stopping these crimes against humanity, and bringing their perpetrators to account. The recent publication of Sir Roger Casement's report was occasioned by the demand of the British Parliament.

It is most fortunate that this demand was made and that the facts have been given to the world, as nothing but this wide publicity will be effective in the immediate correction of these revolting conditions. The government of Peru has known for some years of the practice of these atrocities, but nothing has been done beyond the sending of one or two commissioners to investigate and report. The effectual ending of these horrors, which have been continued for so many years, will undoubtedly devolve upon the American government, with the co-operation of England, and with the approval of all civilized powers.

These exposures emphasize with tremendous force the desirability of the development and extension of the rubber plantation. On the rubber plantation, or at least on most of them, human rights are as secure as they are in the capitals of the civilized world. It has been a saying for many years that every ton of rubber that came from the Amazon valley cost a human life. During the last twelve years 12,000 tons of rubber have been shipped to London from the Putumayo district. It is estimated that during that time 30,000 of the Putumayo Indians have been tortured to death—nearly three human lives for every ton of rubber. The term "red rubber," which has been applied to this particular product, is certainly no misnomer.

A QUESTION ALL COMBINATIONS HAVE TO SOLVE.

THE announcement that the United States Tire Co. intends, early this fall, to drop the names of its various brands and to mark all its tires with its own name—and that alone—brings to the front again a very interesting question, which has presented itself to all industrial corporations formed by the union of a number of smaller companies. The tendency of the industrial world during the last 20 years has been toward the merging of competing companies into one large corporation; and the question has constantly arisen in these "combinations" whether to retain the established brands of the individual companies or to eliminate them and mark all the goods of the different plants with the name of the one controlling company.

A very considerable part of the value of the individual companies, brought into these gigantic mergers, lies in the good-will which the smaller companies enjoy, the result of good business methods, coupled often with effective advertising, extending over a great number of years. The value of this good-will is recognized by the handsome allowance made for it when the mergers are effected. The visible emblem of this good-will, at least to the consuming trade, is the brand or trade-mark which identifies the company's product. Obviously, to discard this brand and to lose the accumulated value of years of honest manufacturing and judicious exploitation is to suffer a serious loss. On the other hand, for the controlling company to go on indefinitely pushing all its individual brands, one against another, is to proceed in a most wasteful manner. The question is—which is the wiser course—to abandon the old established brands and adopt a new one, or to continue with a multiplicity of trade-marks and the attendant loss of merchandising force?

Each new case must be treated by itself; but at the same time there are certain general principles always in-

volved, that may be laid down as a general rule of guidance. If the article manufactured by the old company has never been advertised, or only to a limited extent, its brand can obviously be changed without a serious loss of prestige. Or where it is so inexpensive that people, as a rule, will not trouble themselves to ask for a particular brand, being satisfied to get whatever the salesman may offer, there again the change of name is not a serious matter. For instance, in the case of small druggists' sundries, like hot-water bottles, syringes, small rubber mats, a change of name would not appreciably lessen the sale, as these articles being comparatively inexpensive, few people are much concerned as to the particular brand they get. The same is true of light rubber footwear. The average man buys a pair of rubber shoes when a storm is imminent, takes what the salesman put on his feet, grumbles at the price and on general principles criticises the quality, but never looks at the brand and would get no enlightenment from it if he did.

But when you leave the realm of small and inexpensive rubber articles, the situation is changed. The factory superintendent who has found that a certain belting or packing gives him excellent results, naturally wants to continue the use of the same brand. In footwear, the fisherman who has got a great deal of service out of a certain pair of rubber boots, is likely, not only to ask for that brand, but to extol it among his neighbors. The same is true, though possibly to a less extent, of miners, lumbermen and farmers. They buy their boots and heavy shoes by brand.

The value of a well-known trade-mark is even greater in the production of tires, for there is an item of material expense; and the motorist who has accomplished five or six thousand miles without a mishap on a certain brand of tires is naturally very favorably disposed towards that particular manufacturer and all his works. It needs no argument to show that in these articles, where brand stands for reputation and good-will, there is inevitably a serious loss where the brand is changed.

Most large combinations have solved this question by allowing the old brands to continue for a certain length of time, perhaps two or three years, while gradually introducing the new general brand; in many cases allowing that and the individual name to appear side by side until the trade had become accustomed to associating the two together, when the individual brand was dropped, the new blanket brand being the only one retained. This enables the company to concentrate its merchandising energy on a single name, a condition that has many obvious advantages.

Where the original companies, in addition to their company names, also have special names for certain of their product, these special names can, of course, be retained after the brand of the individual company has been merged in that of the general company. For instance, when the United States Tire Co. drops the name Morgan & Wright, it will undoubtedly retain the name "Nobby Tread" to designate a certain type of tire made by the Morgan & Wright Company, and which to a great many consumers, at least, is the significant identifying mark rather than the name of the manufacturer.

SYNTHETIC RUBBER ON ITS WAY.

IT is doubtful if Professor Perkin had any idea when he delivered his address on synthetic rubber, June 17, before the London Section of the Society of Chemical Industry, how much of an audience he really had. He probably thought that it comprised merely the learned members of the chemical fraternity who sat before him. He has discovered since that it included everybody interested in rubber in the four quarters of the globe. The attention that this address has received and the discussion it has excited, not only in rubber circles but in the press generally, show that the attitude of the rubber world towards synthetic rubber is one of alert expectancy—it obviously believes that synthetic rubber is on its way.

It was some 30 years ago that an eminent English chemist, Sir William Tilden, discovered that isoprene could be produced from turpentine, and that rubber could be produced from isoprene—but the process of making rubber in this way was extremely expensive. Hundreds, or more accurately thousands, of chemists during the intervening 30 years have sought the discovery of a process by which isoprene could be cheaply produced, and then inexpensively converted into rubber. During the last three years a group of German chemists and another group of English chemists have been working laboriously on this problem—each fearing that the other would solve it first. In England Professor W. H. Perkin, of the University of Manchester, Dr. F. E. Matthews, and Sir William Ramsay, assisted by Professor Fernbach, of the Pasteur Institute of Paris, have been working together most industriously to produce a low-cost rubber. The results of these efforts are embodied in Professor Perkin's paper, which is treated in more detail elsewhere in this issue. In a word, they consist of the conversion of starch, as found in various cheap materials—pota-

toes, corn, maize, etc—into fusel-oil by a process of fermentation discovered by Professor Fernbach. Various alcohols, separated from this fusel-oil by distillation, are then converted into isoprene, or one of its homologues, by the action of chlorine. Dr. Matthews then discovered that by the use of metallic sodium, isoprene could be readily converted into rubber, having exactly the same chemical character as rubber produced from the tree. These English chemists assert that it will be possible to produce rubber in this way, in commercial quantities, at 60 cents a pound, and they hope to be able to produce it for about one-third of that amount.

There is naturally considerable skepticism in the trade in regard to these announcements—a skepticism attributable to the fact that similar claims have been made from time to time during the last quarter century—but it must be borne in mind that the English group of chemists who are behind the present announcement are men of good repute and recognized standing. It is hardly credible that they have deceived themselves, and still less thinkable that they desire to deceive others. They undoubtedly have made a distinct advance towards the goal of practicable, commercial, synthetic rubber. Their claims are further fortified by the work of the German group of chemists who have arrived at practically the same result through their independent researches. To be sure the Englishmen have not yet produced their new rubber in commercial quantities, nor subjected it to the physical tests which must ultimately decide its industrial value; but the German chemists are reported to have applied physical tests to their product with very satisfactory results.

But no alarm need be felt by investors in rubber plantations, for, as is set forth in detail on another page of this issue, five of the leading plantations of the Far East show in their reports for 1911 that the rubber which they sold at an average price of $1.22 per pound, cost to produce less than 39 cents a pound. Synthetic rubber, even if it had now arrived in commercial quantities, would have to be produced at considerably under 60 cents a pound, seriously to threaten the plantations. If, as Professor Perkin hopes, commercial synthetic rubber can be produced at 24 cents a pound—that would be another story, but the day of 24-cent synthetic rubber is probably some distance away. When it arrives, it may find plantation rubber even lower. It is an interesting contest—science vs. nature, and may the most economical producer win.

THE "AKRON" DISASTER.

JUST how far man will be successful in his attempted conquest of the air can at present only be conjectured. That aviation will have a constantly increasing scientific interest, and that it will play a significant part on the next occasion for military operations, cannot be doubted; but whether it will ever have an important place in our commercial life is still an unanswered question.

Man is equipped by nature to walk the earth, and —where necessary—to swim the seas. These two elements, in their normal conditions, he has brought under his control. But the air is a thing of a different color. Man has no natural equipment for its subjugation. It is too unstable and elusive for his grasp; but the attempt to conquer it will go on—attended with a sad sacrifice of human life. But no sacrifice of human life is in vain which is in the cause of man's increasing dominion.

During the last 20 years, since serious attention was first turned to the dirigible balloon, 56 lives have been lost in this field of discovery, but they have been so many contributions to legitimate science. The intrepid Vaniman and his four courageous comrades, whose lives were snuffed out a thousand feet above the waters of Atlantic City, when the famous dirigible "Akron" came to grief, in the early morning of the second of July, will take their place among the martyrs to scientific progress. Entirely apart from the human sympathy that goes out to the victims of this shocking disaster, great regret must be felt at the untimely taking off of the aeronaut-in-chief; for Vaniman, while perhaps not an aerial scientist of the first class, had proved himself a man of tremendous determination and undaunted courage, and of great fertility of resource.

Just how the fatal accident occurred can never, of course, be definitely determined. One theory is that as the hydrogen gas was let out from the escape valves it came in contact with electric sparks from the motor, and thus caused the explosion. Such an explanation is given, with considerable detail, by an expert quoted in our Akron letter in this issue. It is interesting and plausible. Another theory, however, which seems to rest on reasonable grounds, is that the hydrogen expanded so rapidly under the sudden heat of the early morning sun that it could not be let out through the valves fast enough, and that the strain upon the thin covering of the balloon became more than it could stand.

It has been advanced by a certain scientist that rubberized fabric, when kept for some time in contact with hydrogen gas, as when a balloon is inflated, absorbs some of the hydrogen and thus suffers a loss of purity and strength. This may have been the case with the "Akron," which had been inflated for some months. By reason of this fact, its covering may have been somewhat weakened and thus less able to withstand the great strain o fthe expanding hydrogen.

Trinidad and Its Rubber—II.

By the Editor of "The India Rubber World."

A Yellow Fever Souvenir—Port of Spain—Beginnings of Rubber Planting—St. Clair Experiments—Many Castilloas in Trinidad—A Big Producer—Funtumia—Heveas the Present Hope—Tapping and Coagulating Processes—Yields of Heveas Brasiliensis and the Confusa Type—Mr. Hart and the Annual Crop—Professor Carmody on Castilloa Resins—Tapping by Pricking—List of Trinidad Rubber Estates.

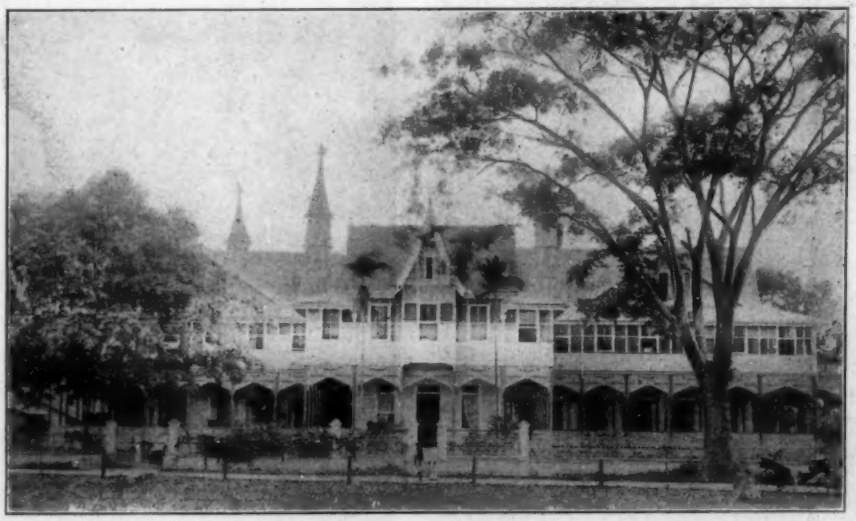
I HAVE as a souvenir an official document bearing the coat-of-arms of the colony of Trinidad, which was thrust upon me when I returned from my trip up the Orinoco. It read: "Take notice that you, being a person permitted to land subject to surveillance in this colony from a place infected with yellow fever," etc.

RAILWAY STATION FROM ENTRANCE TO RUBBER LANDS ESTATE, LONGDENVILLE.

This kept me reporting to the port physician daily for a week. There was no yellow fever up the Orinoco when I was there, but as all the rest of the West Indian world, and Venezuela as well, quarantine against Trinidad's bubonic plague, I suppose they do this to get even.

Trinidad is very English, as is natural, and most of the government positions are held by Englishmen, from the Governor down. The residents have about the same distaste for Americans that the Londoners have for Trinidadians.

It is doubtless the fault in part of the hordes of winter tourists who invade the chief hotel—the Queen's Park—at stated intervals, and whom the management allow to seriously incommode regular patrons. But that would hardly account for the newspaper attitude, which editorially comments upon the tourists as gum-chewing, loud-voiced and ignorant. Still they reach eagerly for American money. There are exceptions among the island residents, and they stand out in bold relief, cordial and friendly.



QUEEN'S PARK HOTEL, TRINIDAD.

The little island takes itself very seriously, and has all sorts of ponderous functions that the Governor opens and closes, and a social system that is made up of innumerable circles that have for a common center "Government House."

Port of Spain, the capital, is a rather flat city, with a number of beautiful government buildings and a wonderful Botanic Garden. The late J. H. Hart, whose contributions to this paper will perhaps be remembered, more than any one else laid out and beautified these gardens.

Fully thirty years ago a few rubber trees were planted in these gardens, and during the past half-dozen years much has been done in the way of tapping, coagulating and experimenting.

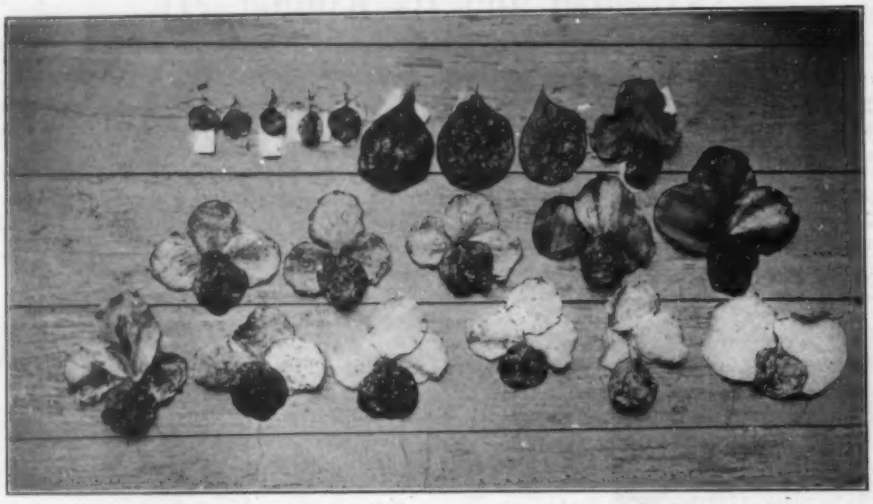
Close to the gardens is the St. Clair Experiment Station. When first I visited this station it was in charge of the late J. B. Carruthers, who had come from the Middle East in the midst of the rubber boom, full of the determination to make rubber profitable here. His sudden death did not stop the work, which, under Professor Carmody, is now being carried on by Mr. Freeman, who is much more of an organizer and practical man of affairs than his predecessor could ever have been.

DRAGON'S MOUTH, TRINIDAD.

There are in the island a great many rubber trees; indeed almost every cacao plantation has at least a few. In driving through the country one continually sees *Castilloas*, *Funtumias* and *Heveas*, but as a rule the trees are young, and in many cases where they are fully developed they have not been tapped. I questioned several planters about this and they freely acknowledged that they were afraid of injuring the trees, and were waiting until they could be sure of the best way before beginning the extraction of latex.

There is more *Castilloa* than any other rubber producer, the number of trees being considerably over one-half million, and as elsewhere, the tree is uneven in its growth and production. As a basis of hope, however, there is the record of a *Castilloa* in the Botanic Gardens that gave 4 pounds and 15 ounces in two tappings one month apart. The tree, to be sure, is 30 years old, and grown in a little valley where it has the rich wash of the hillside. It is a big one, some six feet in girth

and very thrifty. One's doubts are renewed, however, when examining some twenty or thirty *Castilloas* on the other side of the hill. They are not thrifty, nor would they be picked as possible producers of more than two or three ounces per tapping. It is gradually dawning upon planters that the *Castilloa* will grow almost anywhere, but it will produce profitably only under the most favorable conditions.



SAMPLES OF RUBBER, EXPERIMENT STATION, TRINIDAD.

For some time, as the planters began to doubt *Castilloa*, their hope centered upon *Funtumia*, and from 20 to 30 thousand of these beautiful trees were planted. The yield, however, was not satisfactory and they turned to *Hevea Brasiliensis*, of which there are about one hundred thousand trees now planted, on the island.

The planters naturally look to the scientists in charge of the St. Clair Experiment Station, not only for help in determining proper soil in which to plant rubber, but to secure expert advice on diseases, insect pests, tapping tools and methods of coagulation. It has, therefore, been necessary for the Experiment Station to be equipped with the best tools, and also with simple and efficient appliances for turning the milk into a merchantable rubber. In the case of the *Castilloa*, for example, they have done away with both the Mexican style and that of the Middle East, and tap in the fashion prevalent in Tobago. That is, an enameled cloth apron is placed about the base of the trees to catch the latex. Then with a 2-inch chisel and mallet, horizontal incisions are made about 1 foot apart up to 30 feet from

FUNTUMIA, 10-YEAR-OLD TREES, ST. MARIE ESTATE, TRINIDAD.

NATIVE ASSISTANTS TAPPING, EXPERIMENT STATION.

the ground. The cuts thus made heal very readily and the tree does not need so long a rest before it is tapped again.

The *Funtumia* after having been spiraled and half-spiraled is now herring-boned.

The *Hevea Brasiliensis* is first smoothed down with a spoke shave. It is then tapped both by the full and by the half herring

METHOD OF TAPPING CASTILLOA, TRINIDAD.

bone. At the time of my last visit they were using "Newey's Secure" knife and Sculfer's tapping tool. The tapping begins at daybreak, the best flow occurring at sunrise. The work is usually done by the native assistants, who are very skilful and reliable. The latex is caught in tin cups in which is a little water.

By 7:30 to 8 the flow has ceased, when the cups are taken off and their contents weighed and a record kept of the product of each tree. The latex is next strained, acetic acid is added, and it is set away in white enameled plates to coagulate. Twenty-four hours later the spongy pancake that has formed is taken out of the plate and the water squeezed out of it by means of a rolling-pin. The date and the number of the tree is then pricked in, and it is laid away to dry for twenty-four hours. It is then smoked. The apparatus consists of a small pot stove above which is a smoke box filled with wire shelves. Dried ants' nests are used for fuel, and the rubber is left in the smoke house until it becomes as nearly translucent as may be. About three days of smoking, the fire going out at night, is usually sufficient.

In this connection the results of some of the tappings of *Heveas* at the Experiment Station may be of interest. Fifteen trees, *Hevea Brasiliensis*, gave the following yields from July to December last year:

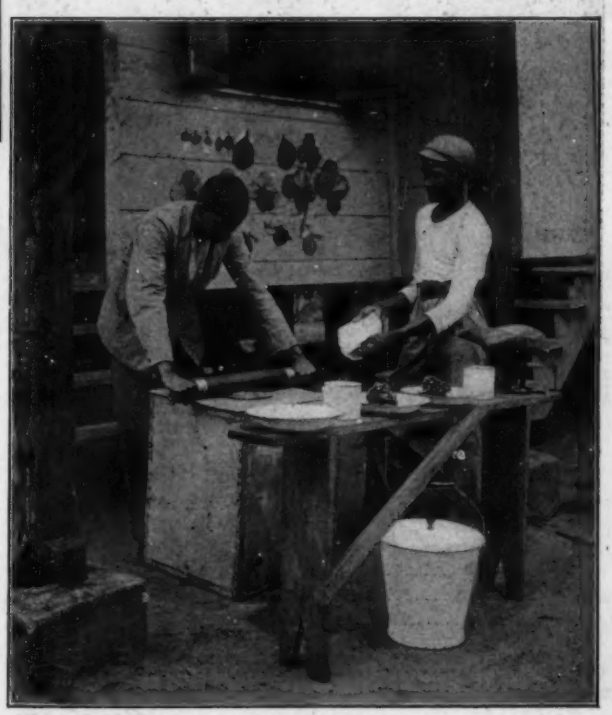
No. Tree.	Girth.	Age.	Yield.
24	23 inches	13 yrs.	1 lb. 13.9 oz.
23	20¼ "	13 "	1 " 10.5 "
16	24½ "	13 "	1 " 6.04 "
17	27½ "	13 "	1 " 11.72 "
18	29¾ "	13 "	6 " 4.63 "
19	29¼ "	13 "	2 " 0.78 "
14	21¾ "	13 "	1 " 5.63 "
15	25½ "	13 "	3 " 11.1 "
2	36¼ "	13 "	4 " 1.70 "
20	28½ "	13 "	1 " 6.76 "
3	34 "	13 "	3 " 1.09 "
21	23 "	13 "	0 " 14.52 "
22	29 "	13 "	2 " 11.13 "
25	27 "	13 "	1 " 14.4 "
1	28¼ "	13 "	4 " 7.4 "

Six trees of the *Hevea Confusa* type, tapped in the same manner and for the same time, produced as follows:

No. Tree.	Girth.	Age.	Yield.
6	34¾ inches	13 yrs.	1 lb. 3.9 oz.
8	36½ "	13 "	1 " 8.6 "
5	33¾ "	13 "	0 " 4.86 "
4	31¾ "	13 "	0 " 8.24 "
7	35 "	13 "	1 " 0.68 "
10	34 "	13 "	1 " 1.20 "

It was in Trinidad that the first experiments toward planting *Castilloa* as an annual crop were undertaken. In 1902 the late J. H. Hart, then in charge of the Botanic Gardens, sent me samples of *Castilloa* rubber and wrote as follows:

"Some few years ago I pointed out the apparent possibility of cultivating *Castilloa elastica* as an annual crop. This was based upon an analysis made by a gentleman studying the rubber question, who found 8 per cent. of rubber in stems of one-year-old trees. That the actual amount of rubber material was found, there can be little doubt, but its quality was not stated, and had



SQUEEZING WATER FROM PANCAKES, EXPERIMENT STATION, TRINIDAD.

to be proved later. This has been done at the Tropical Experiment Station, Trinidad. But it is now evident that although rubber material may have been found, it was of inferior quality,

and only the larger trees eight or ten years old, can be depended upon to furnish rubber of good quality. It was anticipated that rubber material could have been extracted from one-year-old trees, but this has proved illusory, for although chemically, the rubber is there, yet it is not in such a condition as to make it of market value, and up to the present no chemical process has been devised which will change the soft and sticky material obtained from young trees into the hard and elastic product afforded by mature trees.

"Experiments with rubber fluids, or *Latex*, show that *Castilloa* rubber taken from trees at 4½ years is inelastic, somewhat brittle and of quite inferior quality, while rubber fluids taken from trees 10 to 15 years gave rubber of excellent quality.

"Side by side with these experiments have been conducted tests of the rubber fluids of *Funtumia elastica*, from trees 4½ years planted, and these are found to produce rubber of excellent quality at their age, and, moreover, the material is at once easily coagulated by heat as taken from the tree, and the fluids are found to contain considerably over 50 per cent. by weight of solid rubber.

"Unless some chemical process can be devised to alter the resinous and sticky character of the rubber obtained from young

ALLSTONIA SCHOLARIS, TRINIDAD BOTANIC GARDENS.

Castilloa trees, it is utterly useless to plant them with a view of obtaining annual crops."

In this connection Professor Carmody's table of the resin contents of *Castilloa* rubber in Trinidad is very apropos:

Age Years.	Per Cent. Resin.
3	53.99
7 to 8	28.60
do	26.93
do	27.09
do	27.31
do	15.29
15	13.42
do	11.37

An interesting experiment was tried by Mr. Frank Evans in the Trinidad Experimental Station, in which the trees were tapped by means of a great many small punctures spread over the whole surface to a height of 8 to 10 feet. This system promised excellent results, as the first tests gave a yield of from ¾ to 2¾ pounds of dry rubber per tree at a single tapping; but it was found that the wounds made by these pricking instruments had usually a rough edge and healed badly. Another objection

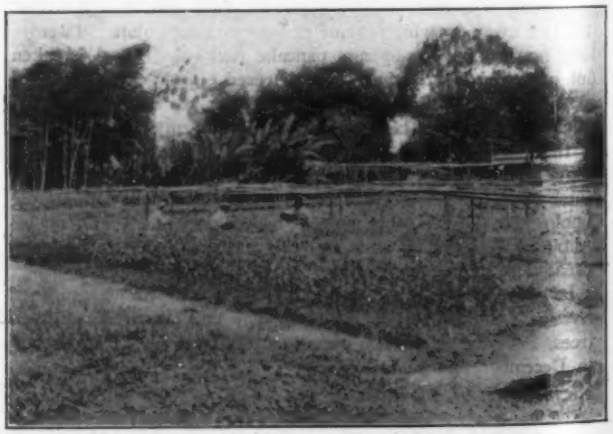
PALM-SHADED AVENUE, TRINIDAD.

to this method lay in the quantity of labor required; and a suggestion is made that this difficulty could be overcome by the use of a small light portable engine, worked by compressed air, and connected by rubber tubing with the tapping tool. Of course, such an engine would have to be very light to be carried about by one man, and then, the cost would be considerable, though many experts believe that the tapping of the future will be done by steam or electrical mechanism.

That rubber is really being officially recognized as a product of Trinidad is beginning to be shown by the official lists. They consisted formerly of cacao, cane, cotton, etc., but the following are listed for 1912:

RUBBER ESTATES IN TRINIDAD.

Plantation.	Owners.
Botanic Station	Trinidad Government
Rio Claro	Poole Syndicate
Sta. Onita	F. Boos
Stearrbonum	Carr Bros.
Nonpareil	E. A. Robinson
St. Marie	W. Greig
Verdant Vale	Trinidad Cacao & Coffee Co.
Narva	G. de Games
Oropuna	Department of Agriculture
Monte Cristo	H. Monceaux



HEVEA NURSERY, BOTANICAL GARDENS, TRINIDAD.

RUBBER ESTATES IN TRINIDAD—Continued.

Venezuela	Gordon, Grant & Co.
La Victoria	G. G. Brown
St. Joseph Nurseries	H. Caracciolo
Ellensville	N. F. Graham
San Jose	Heirs of Joyau
La Gloria	De Putron & Ruth
La Monserrat	Alice Boissiere
San Juan	F. Agostini
San Felipe	F. Agostini
Sta. Luisa	A. Sellier
El Dorado	C. Boos
La Mariquita	A. de Tapeyrouse
Solo Consuelo	J. S. Caracciolo
San Salvador	Joseph D'Abadie
San Pedro	Heirs D'Abadie
Maraval	A. Devenish
Tortuga	A. de Verteuil
Guaracara	Heirs M. de Verteu
San Pablo	Mrs. M. Oipriani
Santa Lucia	L. Devenish
Santa Clara	Heirs W. Schorner
Santa Riti	Raoul Maingot
La Concordia	Sidney Knox
La Concordia	A. L. Maingot

(*To be continued.*)

IDENTIFYING SEEDLINGS OF THE CONFUSA TYPE.

TO THE EDITOR OF THE INDIA RUBBER WORLD: Dear Sir:—I noticed in the last number of the "Agricultural News" (June 8, 1912) of the Imperial Department of Agriculture, Barbados, a brief description by you of the chief differences between the true *Hevea Brasiliensis* and our suspected *Confusa* hybrids.

Is there any other publication in which I could obtain fuller information? I notice you also state that it may be probably possible to differentiate between them in the seedling stage. At the Experiment Station where we have both types of seedlings growing (but with the so called *Confusa* hybrid rigidly isolated) the differences between the two—with a little practice—can be readily distinguished; on examination of several thousand seedlings on a private plantation I was able to pick out those which conformed to the latter type—only a few I am glad to say—which were promptly destroyed. I have carefully examined our seedlings from selected good yielders and have found them all true to the parent, which is satisfactory. The curious reticulated venation of the leaves is greatly exaggerated when the plants are growing under fairly heavy shade.

Yours very sincerely,

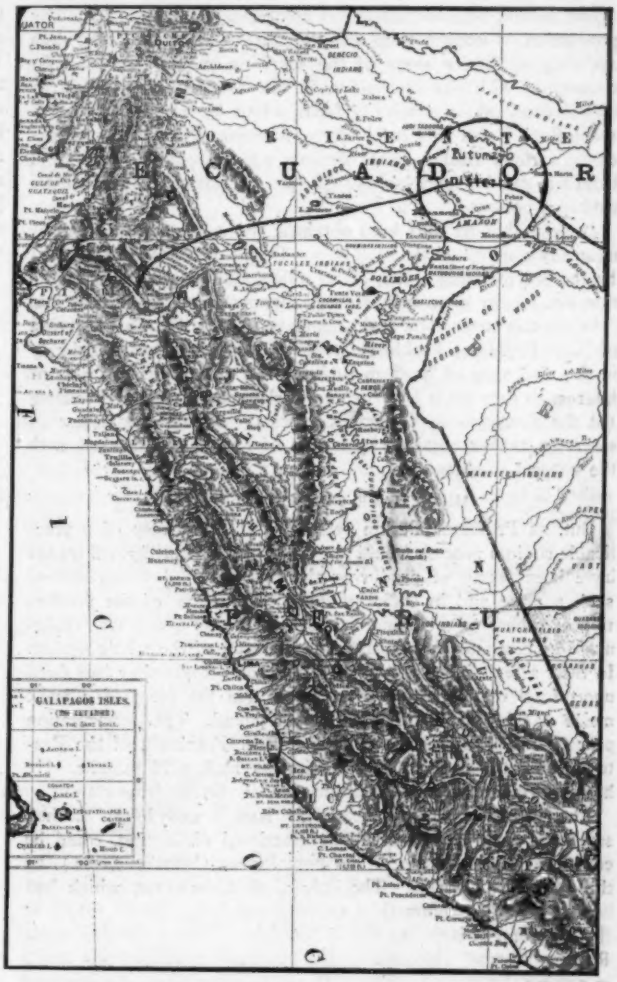
A. E. COLLENS.

Government Laboratory, Department of Agriculture, Trinidad.

THE PUTUMAYO DISTRICT.

THE Putumayo atrocities, which have attracted so much attention and excited so much horror in the civilized world—since the disclosures made in the report of the investigator sent out by the British government—are treated at some length in the editorial department of this issue. The accompanying map shows where this district lies. The boundary lines in the jungles of the upper Amazon are so indefinite, that most maps show the Putumayo River as lying within the borders of either Colombia or Ecuador, but Peru for many years has laid claim to this territory and it was the Peruvian government that made the rubber concession in the exploitation of which these crimes have been perpetrated.

The Putumayo territory is only 800 miles from Lima, the capital of Peru, in a straight line; but the Andes are so impassable at this point, that the only way of reaching the Putumayo district from Lima is by way of the Pacific coast, across the Isthmus of Panama, along the northern coast of Venezuela and the Guianas to the mouth of the Amazon and thence up that river to its headwaters—a journey all told of over 6,000 miles. The distance, however, from Iquitos is only 200 or 300 miles, so it would seem quite possible for the Peruvian government to exercise its authority over this district if it were sufficiently disposed to do so. The agent recently sent out by our State Department, Capt. Stuart Fuller, has reached Iquitos. It should not be long, therefore, before our government gets direct information from the seat of the troubles.



MAP SHOWING PUTUMAYO DISTRICT.

Much credit must be given to the British Parliament for demanding the publication of Sir Roger Casement's report, as it is a damaging commentary on the members of the English corporation, which for the last seven years has owned this rubber concession. The publication of this report, however, means that these atrocities will soon cease, for in this stage of civilization crimes of this kind have only to be uncovered to be ended.

THE GOODRICH COMPANY TO DOUBLE ITS OFFICE BUILDING.

The B. F. Goodrich Co., Akron, Ohio, has begun the erection of a large addition to its present office building, which will practically double its size. This is done to accommodate the officials, sales managers, salesmen and general clerical force of the Diamond Rubber Co., recently merged with the Goodrich Company.

THE NEW BRITISH SYNTHETIC RUBBER PROCESS.

IN view of the interest exacted by recent English synthetic rubber developments, it is of importance to consider what they really consist of. In his paper read on June 17, before the Society of Chemical Industry, in London, Professor Perkin dealt with the labors of the group of investigators who had been working on the subject; this group including himself, Dr. F. E. Matthews, Sir William Ramsay and other scientists.

The results obtained tended in two main directions: (1) The production of isoprene and (2) its conversion into rubber; thus covering the entire scope of the synthetic rubber question. In connection with the first point, it had been found possible to obtain fusel oil economically from starch by a process of fermentation. From this fusel oil, by a series of fractionary processes, various alcohols were derived which would in turn yield isoprene and its homologues; the pivotal point of all synthetic rubber processes.

Isoprene having thus been obtained, its conversion into rubber naturally constituted the next step. This, it is claimed, is effected by the polymerizing action of metallic sodium, rapid transformation into rubber in quantity resulting from the process in question.

While this latter point had been elaborated by Dr. Carl Harries, of Kiel, Professor Perkin claimed for English scientists priority in the discovery of "sodium rubber." In this connection it is of interest to note from Dr. Harries' earlier paper read at Freiburg (at the Congress of German Chemists) that he does not consider the rubber obtained by means of sodium as identical with the natural product.

MUST HAVE CHEAP ISOPRENE.

But, as Professor Perkin remarked, the discovery of a practicable sodium process would not be of practical utility, till means have been found of producing the raw material (isoprene) at such a price and in sufficient quantity to allow of the production of rubber on a commercial scale. This, he urged, was recognized by him and his associates as the crux of the whole matter. In their search for a suitable substance as a basis, they had fixed upon fusel oil, derivable from starch (in the form of cereals, maize or tubers) at a price of 1*d.* per pound. This fermentation process has been elaborated by Professor Fernbach, of the Pasteur Institute, Paris, after experiments lasting 18 months. He had likewise dealt with the production of acetone from starch.

The different alcohols, such as isamyl and butyl alcohol, separated from this fusel oil by fractional distillation, could be converted into isoprene, or its homologues (butadiene, etc.), by the action of chlorine. The only alcohol, however, which had been obtained in commercial quantity was butyl alcohol, which is the basis, *not* of isoprene, but of butadiene. Hence (as the "India Rubber Journal" remarks), since Professor Fernbach has failed in getting the alcohol which is the basis of isoprene, the material which the investigating committee has adopted for the production of isoprene—starch—seems so far to have been a failure. Butyl alcohol when treated by chlorine, ultimately gives as a derivative—butadiene, which, when brought into contact with metallic sodium, forms a type of rubber, it is true, but not the normal rubber, which is obtained through isoprene, acted upon in a similar way.

AT WHAT PRICE CAN SYNTHETIC RUBBER BE MADE?

Thus, it is added, the cheap production of isoprene remains a problem still to be solved, and unless such a method can be found, the knowledge of a rapid method of converting it into rubber will be comparatively valueless.

While it has been claimed that the new process would allow of producing rubber at 60 cents per pound, with a possibility of arriving at 24 cents or less, Sir William Ramsay, who has been interested in the experiments, has said:

"Our experiments as to the best methods of producing rubber will probably last for a couple of years. Then, when we have determined the best methods, we shall erect a manufacturing plant on a large scale."

FINANCIAL ASPECTS OF THE CASE.

Under these circumstances the action of the inventors in more or less disclosing their processes (the results of which are as yet incomplete) has, it is considered, been doubtless precipitated by the offering on the stock market of 450,000 Preferred £1 shares of the Synthetic Products Company, which, it is stated, have met with a very poor reception. According to the London correspondent of the New York "Times," Professor Perkin, Sir William Ramsay, and other eminent scientists are interested in the company, the total capital of which is £500,000. Profits are expected at first to be derived from acetone and fusel oil. By latest accounts, the company claims that over £80,000 had been subscribed, which would be sufficient for establishing the acetone and fusel-oil plant, and for demonstrating the synthetic rubber process on a large scale. The fact that the synthetic rubber process needs more demonstrating, would seem to confirm the evident view of scientists that it has not yet reached a stage of finality.

GERMAN OPINION.

While the new process, according to the view of the English rubber press, has not yet assumed a practical shape, German expert opinion has been in general to the same effect. The "Gummi-Zeitung," while postponing detailed consideration of the subject until it has had an opportunity of examining the full text of Professor Perkin's paper, refers to the proposed exploitation of the new process by a company with large capital. This company, it is remarked, would seem to contemplate, in the first place, the production of acetone from starch, and only in the second, the manufacture of artificial rubber from fusel oil, which is a by-product obtained in extracting acetone from starch. Fusel oil, it is added, will not yield isoprene, but only butadeine, or butadiene rubber, differing in an appreciable degree from natural rubber.

Thus the new process has been received with reserve in both England and Germany, on the ground that its merits have to be more fully tested than has been possible since its appearance upon the industrial stage.

Even without the publicity just recently directed to the subject, the interesting papers read at Freiburg by Dr. Harries and Dr. Hofmann, which will be dealt with next month, and which had already directed attention to the present situation of synthetic rubber from theoretical and practical standpoints, would have brought it to the front. The final result will be the "survival of the fittest;" illustrating the French proverb that "the better is the enemy of the good."

An interesting contribution has just been received from Dr. Fritz Frank, of the Henriques Chemical Laboratory, Berlin, upon the general question of synthetic rubber; likewise referring to Professor Perkin's recent statements. Being too late for use in this number, it will be dealt with in the next issue.

FUSIONS OF AUSTRIAN RUBBER COMPANIES.

According to further details received, the fusion of the Austrian-American Rubber Manufacutring Co. with the Calmon Asbestos and Rubber Works Co., of Vienna, has been effected through the co-operation of the Vienna "Bankverein" with the Lower Austrian Discount Co.

It is stated that at the same time the Austrian-American Rubber Manufacturing Co. acquired the whole of the shares of the Semperit Rubber Manufacturing Co. In consequence of these fusions, the nominal capital of the first-named company will be increased by the equivalent of $400,000, the new capital being furnished by the two banking houses referred to.

Coagulation—Its Technique and Chemistry.

BEING the stage at which the article first assumes its permanent condition, coagulation forms the most important and critical feature in rubber production. Hence in discussing the subject, it is advisable to consider it, under its various forms, with reference, in the first place, to known processes.

As Dr. Frank, of Berlin, the well-known rubber expert, has pointed out, there are four basic methods:—

I. Smoking.
II. Drying.
III. Separation by Chemicals.
IV. Mechanical Separation.

I. SMOKING PROCESSES.

Among the older processes of this class are those of Brown & Davidson and Kerkhove. The process of Derry Dr. Frank regards of a certain importance from a technical and experimental point of view, as well as that of Cotinho (Dannin & Mello, Belem), the products of which, exhibited last year in London, met with his approval. Far more technically important and more suitable for adoption, he considers the processes of Cook (Shaw) and Da Costa (Bridge), which separate the rubber from the latex without completely drying up the latter, as occurs in the smoking process, properly so-called.

The method usually adopted in South America is fully described. Dr. Frank adds that the patented Shaw and Bridge processes, as already mentioned, do not dry up the whole of the latex with all its components, but effect a separation into a serum and a coagulate. The latter (the rubber which has been separated), when the process has been rightly carried out, is uniformly penetrated by the component parts of the smoke. These technical smoking processes, he remarks, may be considered more or less in conjunction with those in which chemicals operate a separation of the rubber from the serum and its components.

Smoking processes, in the proper sense of the word, are referred to as those of Derry, Cardozo, Dannin, and Wickham. Those of Da Costa and Cook are specially mentioned as demonstrating great technical progress.

II. DRYING PROCESSES.

Some kinds of rubber dry directly on the tree, without the intervention of drying agents, and are taken out in the shape of rubber. According to the degree of solidification attained, the substance is simply removed in threads, and compressed into large lumps, or wound. To this kind of process belongs the wild preparation of *Ficus* rubber. Scrap of all descriptions of rubber is generally obtained in wild and plantation culture through drying, in many cases with the help of chemicals. There is also, in some cases, simultaneous addition of certain decoctions (such as tannic acid, soap, salt, etc.). Another important drying process in conjunction with the use of chemicals is the Leva process, discovered by Dr. Hindorff and used in producing plantation *Manihot* rubber. In this process, the tree is previously coated with the extractive chemical solutions, the bark then receiving a number of incisions with a rounded knife. The latex which exudes coagulates while running down, and is gathered from the trunk.

A typical drying process, which has proved successful with *Kickxia* latex in West African plantations, is that of Strauch, in which the latex is let flow on boards, provided with ledges to prevent overflowing. The wood absorbs a part of the moisture, and the next day the latex has solidified into a smooth slab. It is then removed from the wood and dried further. It has been found necessary and advantageous in this process to previously add to the latex certain chemicals, such as purub, formaline and other agents facilitating the separation of the rubber.

A direct tannin drying process for *Funtumia* (*Kickxia*) was first explicitly defined by A. Schulte. A certain quantity of *Funtumia* latex is poured into a vessel resembling a pan, and sprinkled with tannin solution. The vessel is then shaken, and before long the mass can be turned in the mould like a pancake. The still uncoagulated side is then sprinkled with tannin and the movement continued. After a short time solidification has so far progressed that the cake thus formed can be passed through a wringer, which allows the watery serum which has remained to partially escape.

III. SEPARATION BY CHEMICALS.

Many chemicals exercise a separating influence in the extraction of rubber from the latex. To a certain extent, the first collectors of wild rubber used these influences as they existed in the form of smoking and plant juices, as well as in soaps and salts; and in the natural forms of perspiration, saliva and urine. It is not generally known that at one time rubber was extracted by chewing from portions of plants.

In the adoption of chemicals for plantation operations, as Dr. Frank remarks, acetic acid was and has continued to be one of the coagulants most generally used. He adds that according to Schidrowitz, this process (originally suggested in Ceylon by Parkin in 1898) is now used for coagulation in about 98 per cent. of the plantation rubber produced. At the same time an English expert has asserted that on account of its being coagulated with acetic acid, plantation rubber is unsuitable for use in cables and for other high-class purposes.

Approval is expressed of the action of the carbonic acid process, by which that agent separates the important inorganic bases as indifferent salts, together with the rubber, throughout which it is uniformly divided. It does not split up the albuminous substances, but nevertheless apparently operates their separation.

Dr. Frank cites a number of other chemicals and preparations, which can, in his opinion, be more or less recommended for the extraction of rubber. These include formic acid, lactic acid and homologous acids of this class, as well as citric acid and tartaric acid. An objection seems to exist against oxalic acid, on the ground of its taking up the indifferent salts of iron and transforming them into soluble salts. Plant juices containing tannin, and plant decoctions (as well as phenole and creosote, according to their degree of purity), are also referred to. To the last named chemical group belong other alcohols of the sebacic class. Finally, for a special purpose, formaline has proved successful. Of inorganic substances, a number are indifferent, this remark, however, not applying to common salt. Chloride of calcium, on the other hand, seems to be more or less indifferent, or even harmless. It is added that, on principle, metallic salts should be avoided, particularly those of iron, copper, manganese and quicksilver. Of the inorganic acids purub and carbonic acid are spoken of as not only harmless, but even very favorable.

Expert opinion seems to be more skeptical as to the general use of sulphuric acid and muriatic acid.

With respect to albumen, Dr. Frank arrives at the following conclusions:

1. All agents which precipitate and denaturate albumen operate towards separating the rubber.
2. Separating agents which exercise a decomposing influence upon the accompanying albuminous substance, or lead to its decomposition, require in addition to the coagulating agent, the simultaneous presence of preservatives. Substances which do not exercise such a decomposing effect can be used by themselves.

On the general question of chemical coagulating agents, Dr. Frank remarks:

"Many products launched under attractive names, often conceal behind them simple and well-known substances . . . If the price is suitable, trials should be made. The products obtained by the use of new coagulants should not, however, be placed on the open market, but should first be submitted to a testing bureau. . . . Many attractive secret agents are, moreover, not introduced for the purpose of deception, but because the inventors are not acquainted with the materials used, thinking with a stroke of the finger they can open the eyes of an industry."

IV. MECHANICAL SEPARATION.

In a certain degree there belong to mechanical methods of separation those drying processes which are based on the mechanical separation of the serum from the rubber by porous substances, such as clay, wood, etc. But, as Dr. Frank remarks, the real mechanical method for removing the rubber substance from the latex is the centrifugal process. Apart from all patents, he considers the process of this kind most likely to be used is that of Smith, shown at the London International Rubber Exhibition, which he regards as particularly suitable for *Ficus* latex. He adds that it also seems adapted for *Hevea* latex, but in the latter case acid should be added previously to the centrifugal action. Although within moderate limits, the "Michie" process has been employed in Ceylon, being a combination of the centrifugal and centripetal processes.

Another mechanical process of separation is that used on a large scale in the Dutch colonies, for the coagulation of *Ficus* latex. The latex, after having been freed by straining from mechanical impurities, is subjected to the action of a beater or twirling rod. At one time this process was tedious, but it was accidentally discovered that the addition to the fresh latex of the thickened, creamy secretions from latex which had been standing, materially accelerated the separation, thereby rendering the process adaptable for use. The basis of this process had been a number of years ago indicated by Eduardoff, in connection with African vine latex. Still another interesting process is that of Professor Daner for *Castilloa*, in which foreign substances (particularly those of an albuminous nature) are separated by dilution.

Electrical coagulation* in which the rubber is removed in the form of a band, has also been adopted.

THE FRANK-MARCKWALD PROCESS.

The process of Dr. Frank and Dr. Marckwald is based on the simultaneous employment of dilution and heat, in conjunction with suitable chemicals. It is founded on the injection of latex in a thin jet into a much larger quantity of boiling water. The separated portions almost immediately thrown off are taken out of the water, rinsed, and drawn through rolls with the object of removing the water they contain and preparing them for drying. The rinsed or drawn slabs can, if desired, be blocked while wet.

Suitable acids are recommended for various kinds of rubber (such as citric acid, purub, etc.), formaline being specially mentioned in connection with *Funtumia*. These acids are previously added to the diluted latex. The active principle in this process is the rapid and intense solidification, while the albumen is at the same time separated.

In Dr. Frank's opinion, this process is the most satisfactory yet invented for *Funtumia* and *Ficus*, as well as, so far as experience goes, for *Manihot* latex. The latter coagulated in East Africa on a different system, has not produced satisfactory qualities of rubber.

In view of its complicated nature, it is impossible to do more than outline Dr. Frank's detailed and comprehensive treatment of the subject of coagulation, as indicating what is already known regarding it, with a view to its further discussion. His investigations and those of his associate, Dr. Marckwald, are still being continued in that interesting field of research.

*This system, Cockerill's, was described in THE INDIA RUBBER WORLD June, 1912, page 447.

SOUTH AMERICAN TRADE IN RUBBER GOODS.

FROM the views expressed in a recent article by the "Gummi Zeitung," the progress made by Germany in South American markets, is largely due to the active efforts of the large Hamburg export houses. The German rubber industry profits by the generally good reputation of German goods.

To use the words of the journal itself:

> "England is an important competitor in South America. The most important competitor with which the German rubber industry will have, and, in fact, now has to reckon, is, however, the American rubber industry.
>
> "While all that the United States is now doing in South America is more or less of an occasional character, * * * this competition will very soon increase. * * * The American industry is in many cases better situated as to delivery than that of Germany. * * * It can use in a remarkable manner the existing steam communications between the southern ports of the United States and Venezuela, Brazil, etc."

Brazil, it is added, offers the most extensive possibilities, notably as to furnishing the rubber parts used in the construction of machinery, now being largely produced in that country. Automobile tires meet with a good and regular sale in Brazil, the same remark applying to Argentina, Uruguay and Chile. A steady demand likewise exists in all these countries for solid motor-truck tires. The imports of motor vehicles by South American countries notably increased last year.

Rubber goods for electrical purposes come from various countries, while insulating material is chiefly imported from Germany, on account of the marked development of that branch of German industry.

Argentina has developed agriculture in a marked degree, which, it is remarked, affords an opportunity for the rubber industry to furnish certain accessories for agricultural machinery. Rubber hose for purposes of irrigation are in regular demand, the same conditions applying to other South American countries.

Chile and Peru continue good customers of the German rubber manufacturing industry. The opening of the Panama Canal will naturally increase competition for the trade with those countries.

In this connection, it is of interest to recall the total figures of American rubber goods exports to South America, as recorded in the statistics published by THE INDIA RUBBER WORLD in December, 1911 (page 119):

	U. S. Exports of Rubber Goods.	Population.
Brazil	$150,465	19,910,646
Argentina	137,460	7,000,000
Chile	72,110	3,249,092
Uruguay	42,689	1,111,758
Peru	36,122	4,500,000
Colombia	23,017	4,500,000
Venezuela	18,812	2,591,000
Ecuador	13,237	1,500,000
British Guiana	5,980	300,000
Bolivia	2,053	2,267,935
Dutch Guiana	919	70,007
Paraguay	51	635,571
Total	$502,915	47,636,009

Rubber Used in the Brewing Industry.

IT probably is not known to the average beer drinker that each time he quaffs his favorite beverage he pays toll to the rubber industry. Even if he had such knowledge, it would make little, if any, difference with the quantity of beer he would drink. Yet the brewing industry annually contributes probably several millions of dollars to rubber, in this country alone. No modern brewery can produce beer without the aid of rubber. The uses of rubber by the brewer are as varied as they are essential. The greater part of the rubber used in a brewery is in the form of hose, though the rubber used for gaskets and washers is no small part of the total expense that the brewer must pay for rubber in order to do business.

Owing to the necessity of having everything scrupulously clean about a brewery, it is necessary to have plenty of hose for water.

REVERE BREWERS' HOSE.

With the hose of that class the concrete floors are washed several times each day, and everything else that may be cleaned with clear cold water is washed as frequently as occasion demands. For that work a hose one inch in diameter is used. Such hose is almost invariably of the four-ply class, and continues in active service longer than the hose used for other purposes in a brewery. Nevertheless the continued use, and the scraping about the concrete floors has a constant tendency to wear out the hose, with the result that the item of expense for that kind of hose is far from being infinitesimal each year in any brewery. When one stops to consider the number of breweries in this country it is not difficult to obtain some idea of the cost to the brewers of hose for this purpose alone.

Another kind of hose which is quite as necessary in a brewery is that specially constructed hose through which the beer passes on its way to the tanks. True, much of the distance which the beer must travel is covered by means of copper pipes, but there are sections of the way where the rubber hose is much more convenient for the brewer, and the additional expense of a less permanent thoroughfare is deemed worth while by the beer maker. Such hose is known in the rubber trade as brewers' hose. The cover of the brewers' hose is heavy and made of a compound that resists wear and abuse. The lining is heavy, and similar in its nature to steam hose. The inner tube is made extra smooth to prevent the beer from foaming and frothing. Some brands of brewers' hose are four-ply, but many brewers use a five-ply hose for a beer channel, believing that the stronger hose is a better investment, though it costs more to purchase. The size of brewers' hose varies from one and one-half inch to two inches.

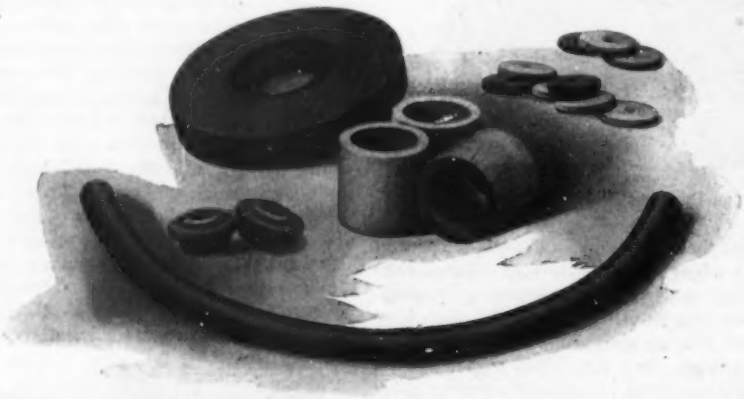
A third kind of hose used in a brewery is that manufactured for the purpose of conveying compressed air into the big tanks which hold from 300 to 500 barrels of fresh beer. The chemical nature of beer is such that it is necessary to keep it under pressure to prevent it from "going flat." The pressure necessary is provided by compressed air which is forced into the tanks through compressed air hose. As there seem to the average rubber expert to be numberless giant tanks in every brewery, one may readily believe there are many miles of compressed air hose used in the breweries of the United States. As the life of such hose, depending on its care and usage, is far from being indefinite, the annual contribution of the brewers to the rubber trade for compressed air hose alone is considerable. It is impossible to obtain an accurate estimate in dollars and cents, but, as heretofore set forth, the cost of hose of the various classes used in the breweries in this country makes an annual total which is important to the men interested in rubber.

The tanks, or mammoth barrels, used to hold the beer in the breweries before it is put in casks or small barrels, are made of wood or steel. There is a divergence of opinion among brewers in regard to whether wood or steel is the better material from which to have these tanks constructed. Formerly all of the tanks were made of wood, and many brewers believe wood has properties which add to the beer. Many beer drinkers prefer beer "drawn from the wood," or drawn direct from the barrels in which it is shipped by the purveyor of the beverage to the consumer. Because of their greater durability, however, steel tanks have been installed in many breweries. Not a few brewers use both kinds of tanks in their establishments, keeping the wooden tanks in use as long as possible, but installing steel tanks whenever it is necessary to put in new ones, either because of an enlargement of their plant or to renew worn-out wooden tanks. Both varieties of tank must be cleaned within frequently in order to produce the best results. For that purpose it is necessary to have a manhole on the side of each tank near the bottom. To a man who has not been employed in a brewery or on a modern battleship, these holes seem too small to admit the body of a full grown man, and it is safe to believe that men with the rotund fronts, seen on some beer drinkers, are not able to squeeze through, any more than a camel can go through the eye of a needle. The holes, however, are made to admit men into the tanks, but, unless the manholes are hermetically sealed, or what amounts to such closing, it would be better not to have the tanks cleaned and to discard them after they had become too foul to use. Otherwise the leakage at the manholes would spoil all the scientific work of the brew-master. The manholes in the wooden tanks can be closed tightly without the aid of rubber, but it is necessary to use rubber gaskets to prevent leakage around the manholes of the steel tanks. These gaskets are made of fairly

GOODRICH BREWERS' HOSE.

hard rubber to prevent them from being ground out by the metal. By the use of the gaskets the tanks are closed as securely as if the manhole did not exist. Notwithstanding the skill with which such gaskets are made, however, they are far from being indestructible. In the nature of things, as soon as they become worn, it is necessary to renew them. Hence the item of expense for rubber gaskets for the steel tanks is not a small item of the annual expense in breweries.

The modern brewery appears to have more pipes than a cathedral organ loft. Because of the pressure under which the beer must be kept to prevent it from becoming "flat," all connections in the pipes in a brewery must be as air- gas- and water-tight as the pipes themselves. For this purpose hundreds of rubber washers are used in every brewery. The nature of the work demanded of these washers is such that it is cheapest, in the long run, to use only the best rubber. A single rubber washer may be bought at a trivial expense, but when the thousands used in the breweries in the United States are taken into consideration, it can be readily understood that the breweries make the rubber washer business a profitable one. Apart from the use of rubber washers at pipe connections, a larger and superior kind of rubber washer is used on the bushing at the outlet of each tank, from which is drawn off the water used in cleaning the interior of the tanks.



GOODRICH BREWERS' AND BOTTLERS' SUPPLIES.

In connection with the cleaning of the tanks it is necessary to use an electric light in the interior. An incandescent lamp of fairly high candle power is used. That no water may touch those parts of the lamp where a short circuit would result from such moisture, the working parts of the lamp and the heavily covered wire for two feet from the lamp are covered with rubber. With such a covering, the man in the tank can spray the interior surface of the tank without fear of being left in darkness. The rubber used for lamp coverings is a comparatively small part of the rubber expense in a brewery, but in a consideration of the uses of rubber in the brewing industry it is by far too large to be unworthy of being taken into account.

In connection with the cleanliness which a brewery must possess, more than a word in passing is necessary to explain an interesting little device for the purpose of cleaning the pipes and hose. It consists of a spiked rubber ball which is forced through the pipes and hose by the pressure of water. The balls are made of a circumference which makes their passage through the pipe or hose snug. These balls are for the most part two or three inches in circumference, with spikes three-sixteenths of an inch long. They do the work required of them effectively and expeditiously, and are no unimportant part of a brewery equipment.

Another and quite notable item of a brewery equipment in which rubber plays an important part, is a safety closing device. In the non-technical language of a brewer's plumber, it consists of a brass mounted glass valve in which a rubber ball may play from one end of the valve to the other. The ball can be held in one end of the valve by means of a screw. The purpose of this safety arrangement is to shut off the compressed air pressure from the beer, after the beer has left the tank on its way to be drawn into the barrels in which it is shipped from the brewery. By the time the beer is ready for shipment, it has accumulated enough gas so that it is inadvisable to continue the compressed air pressure. Without the safety device it would be necessary to have some more cumbersome arrangement, probably with a man to watch it, to prevent the tank from being emptied of everything it contained as well as the beer. The safety device, by means of the little rubber ball, stops the flow of everything after the last of the beer has passed from the tank. Besides the prevention of too much pressure on the beer in the barrels, the device also prevents the compressed air in the tanks from forcing the yeast, which has settled in the bottom of the tanks, through the pipes into the barrels. If the yeast was permitted to enter the barrels which are sent by the purveyor to the consumer, the result would be a cloudy beer which the consumer would assert, and assert rightly, was full of sediment. Such beer would neither be pleasing to the eye nor palatable.

Many miles of rubber belts are used in the breweries of this country. The brewing industry in the United States is managed on such a gigantic scale that machinery is used wherever possible. The heat, cold and moisture in the atmosphere of a brewery are such that rubber belting is a necessity where beer is made. Rubber belting is an important part of the rubber trade, but is a subject by itself, yet it must be taken into consideration in connection with the subject of rubber used in the brewing industry. Next to the cost of the various kinds of hose used in a brewery the rubber belting probably costs the brewer more than anything else made of rubber that he uses in his establishment.

Asked if there were anything else, not hereinbefore mentioned, which causes the brewer to pay tribute to rubber, Mr. Max Papai, brew-master of the Lion Brewery of New York City said that the rubber automobile tires and rubber horse shoes were no small expense. The heavy auto-trucks wear out many tires annually in carting the beer from the brewery, and the hundreds of horses used by the brewers in New York City alone for the same purpose wear out almost innumerable rubber horse shoes in the course of a year. That the rubber story in connection with breweries may be complete, it should be mentioned that, owing to the moisture about such a plant, it is customary to have the offices of such establishments well equipped with rubber mats.

The foregoing may give some idea of the importance of the brewery industry to the rubber trade. It should at least prove the proposition that every glass of beer pays its toll to rubber, even if that toll is only a small fraction of a cent. There have been various estimates of the quantity of beer consumed in this country, whose people are said to be a beer drinking nation. All of the estimates seem gigantic and almost beyond belief. It is in the multiplication of the fraction of a cent toll on each glass of beer which rubber exacts, that the grand total of income that rubber receives from the breweries may be obtained. Under existing conditions there could be little beer without rubber. Fortunately the converse is not true.

Brewing is the ninth industry in size in New York City. Its annual value is over $63,000,000. New York brews one fifth of all the beer and ale produced in this country. It contains 37 different breweries. The annual value of the brewing industry in New York State is $93,000,000.

DETERIORATION IN QUALITY OF BREWERS' HOSE.

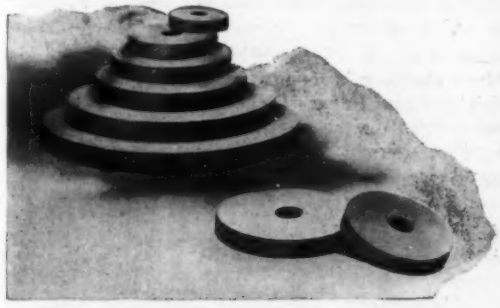
IN a recent address before the technical section of the local Experimental Brewery of Berlin, Dr. G. Bode, of that city, remarked that any one who has for years been examining the rubber hose used by brewers, will have noticed an increasing deterioration in quality. For this circumstance he considered the brewers as well as the rubber manufacturers are to blame. A

RINGS FOR ICE AND REFRIGERATOR MACHINERY.

system of economy prevails in the brewing industry. Formerly it was thought that only the best appliances could be used for the production and preservation of a good quality of beer. Now, in purchasing rubber articles their durability is less regarded than their price.

The simple consideration of the question will show that this course is not right. A good quality of rubber hose, with a life of perhaps six years may be dear, but an inferior grade which only lasts three years, while a little lower in price, is not cheaper in proportion to its reduced durability. Inferior qualities of hose are more easily torn, when they become a source of infection. While part of the blame thus falls upon the brewer the manufacturer, who has lowered his quality, is also to blame.

Rubber manufacturers, it is remarked, used at one time to make a specially high grade hose for brewers, which, they claim, they cannot afford to do at the prices now current. A price is fixed on as low a basis as possible, in accordance with which the



PUMP VALVES.

article made is compounded. The manufacturer is obliged to deliver an inferior product if he is not to lose money, while the increased necessity for repairs is a loss to the brewer.

Dealing with the question of restricting this evil and of the properties called for in rubber hose or discs, Dr. Bode remarks that it is difficult to find a property of rubber goods which can be expressed by a standard. The German navy used to prescribe certain compounds but has now given up the plan, which Dr. Bode considers is of little practical use.

It is further stated that rubber substitutes are often mixed with rubber for the purpose of cheapening the product, but the compound obtained is not homogeneous as the substitute can be extracted by pressure. It can also be dissolved by the beer, imparting a taste of a rubbery character. The use of reclaimed rubber as a substitute for part of the crude rubber Dr. Bode considers allowable, provided that the former contains no lead. As the beer comes into contact only with the interior of the hose it is suggested that an ideal article could be obtained by using Pará rubber for the inner layer, while the external layers might be composed of a less valuable material. In any case the hose should be of a character to resist too rapid wear.

In conclusion Dr. Bode expresses the hope that the increasing production of plantation rubber will tend in the direction of steadying the market. Should this result be attained, the manufacturers will again be able to make the old "brewers quality," to which reference has been made. He adds that it lies with the makers to produce these better qualities which would certainly prove popular; such an improvement of quality being to the advantage of manufacturers as well as to the profit of brewers.

In a later communication, Dr. Bode supplements his preceding remarks, expressing the opinion that while the deterioration in quality of brewers' hose and bottle discs, is partially due to the action of the brewers and partially to that of the manufacturers, it may be likewise in part attributed to the dealers in the articles named.

Without modifying his previous approval of the use in their manufacture of reclaimed rubber free from lead, he remarks that rubber substitutes should as a rule be avoided for that purpose. While small quantities and even certain qualities of substitutes may not exercise any influence upon the beer, he asks whether, with the numerous grades on the market, anyone can be sure the substitute used will not produce any effect. For the above reason, Dr. Bode has constantly recommended that brewers use only qualities free from any admixture of substitutes.

Brewers' hose, to be serviceable, should, he also remarks, stand proper disinfection. If the texture suffers from this cause, he considers the hose should be rejected. He further recommends the adoption of several standards of quality; the prices of which would necessarily vary with the market fluctuations of the crude material.

Particular care should be taken with the interior surface of hose, with which the beer comes in contact. This he specially connects with the possible bursting of inside seams and the risk of the consequent infection of the beer.

MEETING OF THE AMERICAN CHEMICAL SOCIETY.

A meeting of the Council of the American Chemical Society will be held in New York on the evening of Monday, September 9, 1912, to consider changes in the constitution rendered necessary by the growth of the society.

A general meeting of the society will be held on the Wednesday following, September 11, in the Doremus Lecture Theatre of the College of the City of New York, to pass upon the action taken by the Council.

The president and secretary of the society urge its members, of whom there are now 6,100, making it the largest in the world, to hurry in their applications for membership in the Eighth International Congress. This membership carries with it the privilege of getting the printed proceedings of that Congress, which are considered very valuable by the chemical fraternity. Dues for membership in the Congress should be sent to W. J. Matheson, Treasurer, Eighth International Congress of Applied Chemistry, 182 Front street, New York City, New York.

THE accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

The Imperial Institute at the N. Y. Rubber Exposition.

GREAT interest has been aroused by the announcement that the directors of the Imperial Institute of London have consented to send to the Rubber Exposition, to be held in New York in September, an extremely fine collection of rubber grown in every British rubber-producing country, in charge of a special commission.

The Imperial Institute is one of the most important institutions of the British Empire. It was founded by the late King of England and His Majesty King George V. is at the head of it. The products and resources of the British Empire are shown at the Institute, and His Majesty has permitted the director, Prof. Wyndham Dunstan, M.A., LL.D., F.R.S., to prepare an exhibit for the New York exhibition.

The object of this exhibit is to illustrate the rubber resources of the British Empire by means of specimens from the collections of the Imperial Institute. The exhibit includes (1) herbarium specimens of the principal rubber-yielding plants and (2) representative samples of rubber from the following countries: India, Ceylon, Straits Settlements and Federated Malay States, British North Borneo, Papua, Fiji, Gambia, Sierra Leone, Gold Coast, Northern Nigeria, Southern Nigeria, Anglo-Egyptian Sudan, Uganda, East Africa Protectorate, Zanzibar, Nyasaland, Natal, Transvaal, Rhodesia, Seychelles, British Guiana, British Honduras, Jamaica, Trinidad, Dominica, St. Lucia and Bahamas.

The section devoted to each country will be provided with a descriptive label giving general information regarding the rubber-yielding plants which are indigenous to, or are being cultivated in, the country, and statistics of the rubber production during the last ten years.

The Institute's contribution to the Exposition will include the following:

LIST OF EXHIBITS.

I.—HERBARIUM SPECIMENS OF RUBBER PLANTS.

Hevea Brasiliensis, the Pará rubber tree.
Manihot Glaziovii, the Ceara rubber tree.
Castilloa elastica, the Central American rubber tree.
Funtumia elastica, the West African rubber tree.
Landolphia Owariensis, *Landolphia Heudelotii*, *Landolphia Kirkii*, } African rubber vines.
Landolphia Thollonii, *Clitandra Henriquesiana*, } African shrubs yielding root-rubber.
Carpodinus hirsuta, African vine yielding paste rubber.
Mascarenhasia elastica, the Mgoa rubber tree of East Africa.
Sapium Jenmani, the Sapium rubber tree of British Guiana.
Forsteronia Floribunda, Jamaica rubber vine.
Alstonia plumosa, Fiji rubber vine.

II.—RUBBER SPECIMENS.

INDIA.

Ficus elastica rubber—Block, Scrap.
Pará rubber—Biscuits.
Ceara rubber—Biscuits.
Castilloa rubber—Sheets.
Cryptostegia grandiflora rubber—Lump.

CEYLON.

Pará rubber—Biscuits, Sheets, Crêpe, Block.
Ceara rubber—Biscuits, Sheets.
Castilloa rubber—Biscuits, Sheets.

STRAITS SETTLEMENTS AND FEDERATED MALAY STATES.

Pará rubber—Biscuits, Sheets, Crêpe.
Ficus elastica rubber—Crêpe, Sheets.
Willughbeia firma rubber (Gutta Gerip)—Crêpe.
Gutta Percha—Gutta Taban Merah (*Palaquium Gutta*).

BRITISH NORTH BORNEO.

Pará rubber—Sheet.
Gutta Percha—Gutta Merah, Gutta Tagah, Gutta Lichak.

FIJI.

Alstonia plumosa rubber.

PAPUA.

Ficus Rigo rubber.
Vine rubber.

GAMBIA.

Landolphia Heudelotii rubber—Balls.
Ficus Vogelii rubber—Balls, Lump.

SIERRA LEONE.

Funtumia elastica rubber—Lump, Sheets.
Landolphia rubber—Balls.

GOLD COAST.

Funtumia elastica rubber—Lump, Biscuits.
Landolphia Owariensis rubber—Balls.
Ficus Vogelii rubber—Biscuits.
Pará rubber—Biscuits.

SOUTHERN NIGERIA.

Funtumia elastica rubber—Lump, Biscuits.
Landolphia Owariensis rubber—Balls (Lagos Niggers).
Pará rubber—Biscuits, Scrap.
Ceara rubber—Biscuits, Balls, Scrap.
Ficus elastica rubber—Biscuits.

NORTHERN NIGERIA.

Funtumia elastica rubber—Lump.
Landolphia rubbers—Cluster rubber, White ball rubber, Vine rubber, Jan Donko (Red rubber), White flake rubber.

SUDAN.

Landolphia Owariensis (var. *tomentella*)—Biscuits, Balls.
Ceara rubber—Sheets.

UGANDA.

Funtumia elastica rubber—Biscuits, Sheets.
Landolphia Dawei rubber—Biscuits, Crêpe.
Clitandra Orientalis rubber—Biscuits, Sheets, Crêpe, Balls.
Pará rubber—Biscuits, Crêpe, Scrap.
Ceara rubber—Crêpe.

EAST AFRICA PROTECTORATE.

Landolphia Kirkii rubber—Balls.
Landolphia Ugandensis rubber—Balls.
Mascarenhasia elastica rubber—Balls.
Ceara rubber—Sheets.

NYASALAND.

Landolphia Kirkii rubber—Balls.
Ceara rubber—Biscuits, Balls.

ZANZIBAR AND PEMBA.

Landolphia Kirkii rubber—Balls.
Mascarenhasia elastica rubber—Balls.
Pará rubber.
Ceara rubber.
Castilloa elastica rubber.

TRANSVAAL.

Landolphia rubber—Scrap.
Conopharyngia elegans—Block.

NATAL.

Landolphia Kirkii rubber—Balls.
Euphorbia Tirucalli—Block.

RHODESIA.

Landolphia Kirkii rubber—Balls, Spindles.
Chimeya rubber.
Root rubber (showing stages of preparation).

TRINIDAD.

Castilloa elastica rubber—Sheet.
Pará rubber—Biscuits.

BRITISH GUIANA.

Sapium Jenmani rubber—Biscuits, Lump, Balls.
Mimusops globosa—Sheet balata.

BRITISH HONDURAS.

Castilloa rubber.

BAHAMAS.

Cryptostegia grandiflora rubber—Biscuits.

ST. LUCIA.

Castilloa elastica rubber—Biscuits.

DOMINICA.

Pará rubber—Biscuits.
Ficus elastica rubber—Biscuits.

JAMAICA.

Forsteronia floribunda rubber.

THE NEW YORK RUBBER EXPOSITION—A FEW OF ITS INTERESTING FEATURES.

RUBBER matting, specially made for this exhibition, will be laid down at the main entrance, and in different parts of the building.

A rubber roadway will be put down in the Exhibition hall and a rough-shod horse will be working on it.

Moving pictures depicting the collection and preparation of rubber in the Federated Malay States will be shown by the government of that country.

A tour through a rubber mill may also be taken by invitation of a large rubber concern.

The display of the United States Rubber Co. will be exceptionally fine.

The Buffalo Foundry & Machine Co., the Farrel Foundry & Machine Co., the Curtis & Marble Machine Co., the J. P. Devine Co., the United Shoe Machinery Co., John Royle & Sons, Werner & Pfleiderer, and Turner, Vaughn & Taylor Co., will have large exhibits of machinery in motion.

One manufacturer will show a circular loom weaving cotton fabric for fire hose.

The rubber reclaimers and manufacturers of compounds will make large displays; and one will have a working exhibit.

THE INDIA RUBBER WORLD'S $1,000 cup to be awarded at the London Rubber Exhibition of 1914 for the best method of extracting the latex from *Castilloa elastica*, will be on view.

Other trophies awarded at the 1911 London Rubber Exhibition will be exhibited, with samples of the rubber that won the prizes.

Season tickets, at $3, will be issued, entitling the holders to admission on Press View Day, the opening ceremony, conferences and at all times when the exhibition is open to the public. They also include membership in the Exhibition Rubber Club.

A number of the foreign delegates will put in an appearance early this month. Dr. Dahne, the commissioner for the federal government of Brazil will arrive in a few days. That country has secured 7,500 square feet of space. Manáos is sending thirty tons of rubber; Matto Grosso ten tons; Acre ten tons; and this will be supplemented by full displays from Pará and other States. The Brazilian section will be a most complete and elaborate one.

The erection of the Ceylon government stand is now well advanced and the exhibit will be a very attractive one, covering some 2,000 square feet of space.

Invitations have been issued to the purchasing agents of the railroads and many leading chemists to attend the International Conference and a number of replies have been received.

Preliminary arrangements for functions, which are subject to alterations and additions will be as follows:

PRELIMINARY ARRANGEMENTS FOR RUBBER EXPOSITION FUNCTIONS.

(Subject to alterations and additions.)

Sunday, September 22, afternoon or evening—Press View and Lunch.

Monday, September 23, at noon—Opening Ceremony. At 2 p. m.—Exhibition open to the general public.

Tuesday, September 24, 11 a. m.—Meeting of the International Conference—President, Mr. H. C. Pearson; secretary, Dr. F. Dannerth.

Wednesday, September 25, afternoon—Special Invitation Day by the Commissioner for the Government of Ceylon.

Thursday, September 26, afternoon—Special Invitation Day by the Commissioner for the Federal Government of Brazil.

Friday, September 27, afternoon—Special Invitation Day by the Commissioner for the Federated Malay States.

Saturday, September 27, evening—Exhibition Supper Club—10.30 p. m., special evening.

Note: The Supper Club will meet at the close of the Exhibition each night, at supper, and exchange views on subjects of mutual interest.

Tuesday, October 1—Rubber Exhibition Banquet.

Thursday, October 3, Closing Day, 10.30 p. m.—Supper Club, special night.

Among the exhibitors at the forthcoming Rubber Exposition to be opened on September 23, at the Grand Central Palace, will be the Dutch Guiana Culture Co., of which L. C. Lawton, of the Chicago Rubber Co., is president and treasurer.

The property of the Dutch Guiana Culture Co. consists of 12,000 acres planted to date, with 45,000 *Hevea* and 121,000 Liberia coffee trees.

J. R. C. Gonggrijp, superintendent of the company, will come to New York for the exposition.

COMMISSIONERS FOR THE FEDERAL GOVERNMENT OF BRAZIL.

The Federal Government of Brazil has appointed the following commissioners to represent Brazil officially at the forthcoming International Rubber Exhibition: Dr. Eugenio Dahne, Commissioner General, representing the Minister of Agriculture, Industry and Commerce in the United States; Count Candido Mendes de Almeida, President of the Chamber of Commerce and Director of the Commercial Museum of Rio Janeiro; Dr. Cerqueira Pinto, rubber expert from the Department of Agriculture, Industry and Commerce of Rio Janeiro. Three assistant commissioners, rubber experts, have also been appointed.

460 MILES OF WIRE IN ONE BUILDING.

The new Woolworth skyscraper in New York City, which breaks all records up to the present time for altitude, having some 52 stories, will contain 460 miles of copper wire in its various cables. If this copper wire were all in one piece it would reach from New York nearly half way to Chicago.

The Rubber Club of America

THOSE who know the Rubber Club of America need not be told, but other members of the rubber and allied trades may not know so well, that when this club has an outing there is always something doing. There certainly was a great deal doing on Tuesday, July 16, when the club held its annual outing at Peddock's Island, in Boston harbor. This island was chosen by the committee because it combined all the advantages

ARRIVAL AT PEDDOCK'S ISLAND.

necessary for success. In the first place it was twenty degrees cooler than Boston's thermometric attempts to sun-strike the population. Second: there was a good baseball field, and near it a comfortable covered observation stand. Third: there were manly officers of the coast artillery, the welcome they gave the rubber men, the cool sea breezes, the absence of flies and mosquitoes, the surf-bathing facilities, and other things too numerous to mention.

At 1:30 p. m. the steamer "S. S. Griswold" started for a trip down Boston harbor with 150 members of the club and their guests. The band played, and the excursionists cheered. The hot streets and humid air were left behind, and the salt sea-air and ozone made the trip a delightful one. In an hour the landing was made at Peddock's Island, where the company headed by the band marched to the ball ground, where the "Red Sox" and the "Giants" were soon pitted against each other for the mastery.

Here are the personnel of the two teams, and the score of the game:

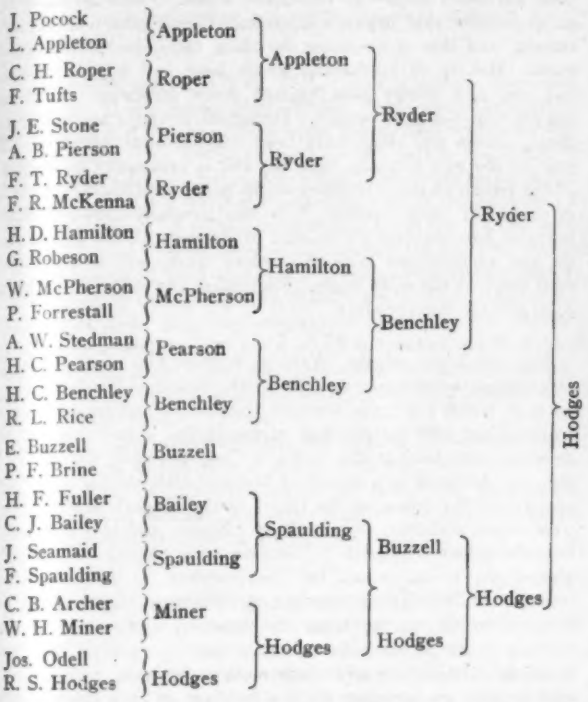
RED SOX.	Runs.	GIANTS.	Runs.
R. L. Chipman, p.	1	James Clifford, p.	1
H. G. Tyer, c.	0	M. G. Hopkins, c.	0
W. L. Pitcher, 1b.	0	C. R. Russ, 1b.	1
J. E. Odell, 2b.	1	Ralph Lowenthal, 2b.	0
P. E. Young, 3b.	0	H. C. Benchley, 3b.	0
G. A. Clapp, ss.	1	D. Feinburg, ss.	0
Lawrence Page, l. f.	2	E. L. Phipps, l. f.	0
R. L. Rice, c. f.	0	R. W. Harris, c. f.	1
L. R. Lampie, r. f.	0	J. Walker, r. f.	0
	5		3

It was a hotly contested game, and Umpire F. C. Hood found his duties extremely strenuous. There were some very brilliant plays, Lampie's catch and double play perhaps being the most sensational. Only five innings were played, and these were voted fully enough for "gentlemen players."

ON THE HOTEL STEPS OF PEDDOCK'S ISLAND.

good grounds for athletic sports. Fourth: there was a good beach with plenty of seaweed, clams, lobsters and rocks for the proper concoction of a clambake. Fifth: but why enumerate further? For these are enough without counting the gentle-

Then there was a quoit tournament. This was worked by elimination. The loser of each pair dropped out of the contest, the winners paired off and those who won were pitted against new contestants. Thus the tournament was exciting and interesting until its close. Here is the whole story in a diagram:



The declaration that R. S. Hodges was champion of the tournament and F. T. Ryder was second, was hailed with applause by the spectators.

Next in order was the potato race in which the following participated: Appleton, Hamilton, Hopkins, Learned, Lowenthal, Chipman, French, McKenna, Roper and Young. The best jugglers and equilibrists in this race were McKenna and Chipman.

Then came the free-for-all 50-yard dash, in which nearly twenty entered, each as earnest as if qualifying for the international races. After numerous false starts, the race was run, and the winners were declared to be McPherson and Chipman.

The use of the grounds was through the courtesy of the Coast Artillery Corps, and the officers from the fort came over to witness the sports and partake of the clambake. They were each and every one fine fellows who entered heartily into the spirit of the occasion, and it was regretted that some of the officers were prevented, because of their military duties, from being present. Those who attended were: Capt. Jos. B. Douglass, 1st Lt. Jos. R. McKnight, 1st Lt. John T. Rowe, 1st Lt. Fordyce L. Perego, 2d Lt. Fenelow Cannon.

PREPARING THE CLAM BAKE.

Then the whole company was rounded up and made to pose in front of the camera man for the group picture. Under the somewhat voluminous coaching of a self-constituted and voluble picknicker, the company posed and looked pleasant, and a work of art in group portraiture was secured.

Meanwhile Captain Francis of Rocky Point, Rhode Island, with his assistants had been busy. A log cabin arrangement of cordwood was built, stones from the beach were piled in it, kerosene poured over, and a huge bonfire kept blazing until the stones were nearly red hot. Then wire netting was placed

ALL READY FOR THE CLAMS.

over the stones, six or eight barrels of clams spread over, then the other "fixins" and seaweed piled on top.

Two long tables had been spread in the open, in full view of the ocean, the setting sun and the crescent moon. Crude

THE FINISH OF THE 50-YARD DASH.

benches ran along each side of the tables. The company—with appetites whetted by the salt sea air—were served with chowder, steamed clams, clam fritters, sausages, sweet potatoes, chicken, lobster and other things eatable and drinkable. They did full justice to the repast, and no one asked in vain for another helping.

We had almost forgotten to report that a golf tournament was played off at the country club in Brookline in the morning; the contestants, their handicap and score being as follows:

	Gross.	Handicap.	Net.
R. L. Chipman	97	9	88
Geo. A. Clapp	113	18	95
J. F. Dunbar	105	17	88
R. S. Hodges	116	8	108
F. C. Hood	85	0	85
M. G. Hopkins		No card	
F. H. Jones	94	11	83
Jas. H. Learned	105	14	91
Herbert C. Mason		No card	
Arthur W. Stedman	105	10	95
Henry C. Benchley	113	16	97
W. L. Wadleigh	100	17	83
Philip E. Young	85	8	77
L. B. Page	88	0	88

The award of the various prizes was an informal affair, each winner being handed a neatly wrapped package, which at the emphatic behests of the crowd he immediately opened and exposed to view. The prizes were well selected, valuable and useful, and showed the good taste of the committee.

The winners were as follows:

Golf—Best net, P. E. Young, afternoon coffee set and tray. Second net, to be worked off between Messrs. Jones and Wadleigh, a silver lemonade mixer. Best gross, F. C. Hood, veranda lemonade set. Second gross, L. B. Page, veranda lemonade set.

Sprints—First, R. L. Chipman, claret pitcher. Second, W. McPherson, silver telescopic drinking cup.

Potato Race—First, F. R. McKenna, humidor cigar jar. Second, R. L. Chipman, set of automobile glasses.

Quoits—First, R. L. Hodges, parlor clock. Second, F. T. Ryder, silver trimmed carafe.

There was a delay of half an hour or so, owing to the low tide, but all the better for the sail up the harbor in the cool of the evening, with the electric lights of the summer resorts coming into passing review; while the band played, the excursionists sang, or talked over old times and business until the wharf at Boston was reached and the company parted, each vowing that this outing had been the "best ever" of all those held by the Rubber Club of America.

And well deserved would be a vote of thanks to all those who worked hard for the success, especially those two who were the hardest workers, Robert L. Rice and Charles A. Coe.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

THE rubber trade generally is about normal for the season. In crude rubber, trade lacks snap, and consumers confine their purchases mainly to immediate needs. There seems to be an impression that prices will decline, though just when is uncertain, and this is given as the main cause for present light trade. Makers of mechanical goods have had a good season, but just now things have quieted down somewhat. Clothing dealers report a good season. Druggists' sundries are selling as usual. Boots and shoes have been ordered away ahead of last year or the two previous ones, but this is principally on account of the return of the companies to the policy of allowing an extra discount for early orders. This has naturally crowded more business into the first six months of the year, at the expense of the late summer and early fall orders, which will be very light until the cold fall rains begin. Reclaimers are busy and report a good call for their product.

* * *

The executives of the Walpole Rubber Co. were tendered a reception and banquet recently by the Board of Trade of Foxboro, in which town the Walpole Rubber Co. has leased an extensive plant with the privilege of purchasing in two years. The reception was held at the Bethany Congregational Church, and this was followed by a dinner at Masonic Hall, served under the auspices of the ladies of the Order of the Eastern Star. There were many addresses by prominent citizens, and invited guests. Superintendent Frederick J. Gleason in a ringing address reviewed the events which led the company to decide on the removal of its tire department to Foxboro. Incidentally he referred to the day as being the twentieth anniversary of the starting of the business, he being the only survivor of the three founders. The whole affair was most enthusiastic, and the outlook is most encouraging for the building up of a splendid tire manufacturing industry in the substantial plant leased by the company.

* * *

Wallace G. Page, of the tire department of the Hood Rubber Co., is receiving two sets of congratulations from his many friends in and out of the rubber business. The first is because Mrs. Page has presented him a fine baby girl, who is thriving to the satisfaction of all. The other cause for congratulatory wishes, oral and written, is his splendid recovery from an operation for appendicitis. Mr. Page was chairman of the Sports Committee of the Rubber Club of America, but his sudden illness prevented his fulfilling the duties of that office at the outing last month, these devolving upon Robert L. Rice, of the Hood Rubber Co., to whom great credit is due for his able management of the sports and games on that occasion.

* * *

The Boston Belting Co. has given the Capitol City Supply Co. the agency for the sale of its mechanical rubber goods at Charleston, W. Va.

* * *

A. Staines Manders, manager of the International Rubber Exposition, to be held in New York next month, was in Boston several days last month, when he visited several prominent houses in the rubber trade, and conferred with his Boston representative, Quincy Tucker, quite well known as a traveler in rubber producing countries. Mr. Manders visited the Shoe and Leather Fair while here, and commented on its uniformity and general neatness of plan, but stated that the Rubber Exposition will allow exhibitors an opportunity for individual taste in design and arrangement of their displays.

* * *

Frederick T. Ryder, the newly appointed selling agent of the Consumers Rubber Co., returned about the middle of last month from quite an extended preliminary trip in the interest of that

company. While the full plans of the new management of this concern are not yet ready to be made public, it may be stated that new styles will be introduced, up-to-date methods adopted, and with finer quality, larger assortment of styles and kinds, and a wider field, the new ownership and management will make this company a more prominent one in the footwear industry.

* * *

The Revere Rubber Co. is doing some extensive consumer advertising of its Spring-Step Rubber Heel, several expensive mediums of national circulation being given large and expensive advertisements. At the Shoe and Leather Market Fair, held in this city the middle of last month, a fine display was made of this specialty. A large picture of the factory was so arranged that a continuous stream of rubber heels flowed from the factory door into a big basket. At the front of the booth a Bunker Hill Monument covered with heels was kept revolving by an electric motor. "The House of the Spring Step Heels" was a model of a house built up of these heels and electrically lighted in the interior. There was a novel rubber plant which blossomed out in rubber heels. A handsome youth was dressed in continental fashion, who distributed neat gold-plated scarfpins of Paul Revere with a Spring Step Heel.

George P. Whitmore, who has not been in the best of health for some time, was present at the fair one day, and received the congratulations of many visitors on the novelty of his exhibit. Mr. Gunlock, of Chicago, who has charge of the heel advertising of this company, was also a visitor.

* * *

Many of his friends were glad to see Secretary W. H. Gleason, of the Revere Rubber Co., at the outing of the Rubber Club of America on July 16. Mr. Gleason has been ill for nearly six months, and although not entirely recovered, is so much improved that he was able to grasp this opportunity to see many of his fellow members of the club and enjoy the outing in a quiet way.

* * *

The Tyer Rubber Co.'s new tire factory at Andover, is approaching completion, and the company expects to occupy it and begin operations in it early next fall. The demand for their tires is strong and growing more imperative every month, and the officials are regretting that the factory cannot be ready to turn out tires during the height of the automobile season.

* * *

Work on the Robert Dawson Evans memorial annex to the Art Museum in this city, an architect's drawing of which appeared in the INDIA RUBBER WORLD for June, last, is progressing rapidly. The excavation is completed, as are also the foundations of reinforced concrete. This work has been completed ahead of contract time, owing to more favorable conditions than were anticipated. The building is to be finished by March, 1914, and present indications point to its completion prior to that date.

* * *

The Foster Rubber Co., of this city, made a big hit at the recent Shoe and Leather Market Fair, by parading through the building at stated intervals their big black cat, or animated trade-mark. This cat, which stands over six feet high (measuring to the end of its perpendicular tail), was made by the property man of the Boston Opera House. The motive power is a man inside, who walks on all-fours, turns on the green electric lights in the eyes, arches the back and otherwise disports himself as a feline. The black cat is the trade-mark of this company's "Catspaw Heels" and every visitor who could be reached was tagged with a heel-shaped pin of celluloid, ornamented with a black cat. William Noll, the advertising manager of the company, was on duty during the seven days of the fair, pushing the heels into wider publicity.

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

THE Miller Rubber Co. have increased their capital stock from $500,000 to $1,000,000. Not long ago this company issued $100,000 stock to stockholders at par and the same was immediately subscribed in full. Then $100,000 stock was issued to stockholders at 150, and this has been mostly subscribed. The purpose of the sale of this new stock is to secure funds to build a new plant which will be located in Kenmore on the outskirts of Akron. The first new building is to be for dipped goods.

* * *

There has been a considerable rise in most rubber stocks in the last month, Goodyear Tire and Rubber Co. stock going as high as 340. President F. A. Seiberling, of the Goodyear Tire and Rubber Co., is quoted as saying: "I do not know the cause of the recent rise in Goodyear stock unless it is due to a speculative fever that has placed a fictitious value on most of Akron's rubber stocks, and which has no sound basis worthy of an investor's consideration.

"There is not the slightest foundation for these merger rumors, and if I understand the temper of the management, there is not the remotest possibility of the Goodyear being absorbed by any of them, and I am equally certain that there is no thought of its becoming an absorber. I regret exceedingly that such rumors are put out, as whether it is the purpose of those circulating them or not to boom the value of stocks, it has the effect of doing so, and makes for an unhealthy situation in our community.

"The basis of value of any stock is its intrinsic worth, its proven earning power and its trade prospects, but rumors as to deals have no place in fixing real values, and should not be considered by investors in forming their judgment.

"Any of the preferred stocks of the leading companies of Akron are sound investments, with earnings under them that can undoubtedly maintain their dividends; but the common stocks are variable in their earning ability, and though earnings in the past few years have been more than satisfactory, it is unreasonable to suppose that this position will be indefinitely maintained, since the business is becoming more intensely competitive daily."

* * *

Seventy members of the Indiana Four-States Tour, representing automobile manufacturers of Indiana spent Friday, Saturday and part of Sunday as guests of the rubber manufacturers of Akron. Complete arrangements had been made for their entertainment here. Soon after the party arrived, the members were taken to Young's Hotel, where a chicken and fish dinner was served.

With one exception there were no speeches. C. F. O'Leary, of Indianapolis, took occasion to thank the Akron manufacturers for the entertainment soon after dinner, pointing out that he was glad to see a spirit of co-operation among the business men of Akron, the same sort of co-operation, he said, that characterized the Indianapolis manufacturers and made the Four-States' Tour possible. After dinner the party left Young's and came to Akron, where a theatre party was given at the Casino.

Considerable excitement was created in Akron when the tourists arrived. The streets were lined with people who welcomed the Indiana party with cheers, and flags and bunting floated from practically every business house. The Indiana machines were decorated in a fitting manner and were piloted into Akron by a local car driven by G. Ben Motz, secretary of the Akron Automobile Club.

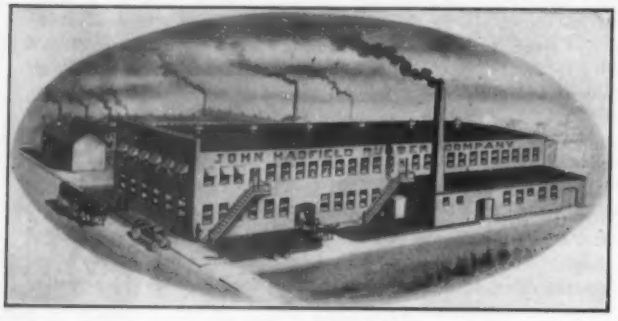
On Saturday morning the party was taken through the leading rubber factories. The afternoon was spent at the ball park, attending the Akron-Canton game. In the evening dinner was

served at the Portage Hotel. The party left Sunday morning for Canton.

The Four-States' Tour was adopted last year by Indiana automobile manufacturers as a novel way to advertise Indiana-made machines. The tour in 1911 was more or less of an experiment, the route being through Indiana, Illinois, Iowa and Michigan. It was such a great success in every way that it was decided to make the tour an annual event. This year the tour is being made through Indiana, Ohio, West Virginia and Kentucky.

* * *

The Hadfield Rubber Co. has been incorporated under the laws of Ohio for $10,000, fully paid up. John Hadfield is president and Hugh Hadfield is treasurer. The company has its office and shop at 911 Sweitzer avenue, Akron, Ohio. The parties comprising the company have been in the rubber busi-



JOHN HADFIELD RUBBER CO.

ness in Akron for almost four years. This company has an extensive dipped and molded goods trade and its business is growing rapidly, necessitating day and night shifts.

* * *

The explosion of the gas envelope of Melvin Vaniman's airship, "Akron," which was wrecked at Atlantic City on July 2, is claimed by Charles Hillman to have been caused by having the escape valves of the gas envelope too close to the exhaust valves of the engine. Mr. Hillman says that there were six exhaust valves in the gas envelope by means of which the gas, when it became heated, was allowed to escape. These valves were placed three on either side of the envelope in a horizontal line slightly on the lower side of the bag. Four of the valves, fore and aft, were located directly over the exhaust from the engine, while the other two were just over the differential propeller. Consequently, when any one of the valves was opened, as was done by means of a string when the gas began to expand, there would be a strong rush of gas, and further, the high degree of inflation which would naturally cause the dirigible to make a rapid ascent, would all the more quickly bring the continuous exhaust from the engine into contact with the downward exhaust from the bag. It would seem from the rapid ascent of the "Akron" that she carried a full head of gas. Persons who witnessed the accident say that they saw Vaniman trying to retard his ascension by bringing the differential propeller towards the surface. When the engine failed to work, he resorted to the exhaust valves in an attempt to decrease the buoyancy of the airship and when he opened his forward valves, allowing a great volume of gas to rush through the large opening, the hydrogen gas was ignited by the exhaust from the engine.

Mr. Vaniman's later inventions were not a part of the original balloon "Akron," as they were evidently conceived after the "Akron" had been constructed.

For Walter Guest, Fred Elmer, George Bourillon, Calvin Vaniman and Melvin Vaniman, the men who gave up their lives in the explosion of the balloon "Akron" at Atlantic City on July 2, we express the highest admiration, especially for their courage and their tireless and hazardous work in the solving of the problems of aërial navigation. The "Akron" was serving as a training school and experimental balloon for the working out of certain problems in aeronautics. Mr. Vaniman expected to build another balloon that would include all his inventions and those of the men who were working with him, and ultimately construct a balloon that would be safe for short or long flights, even for crossing the Atlantic Ocean when desired. These men were tireless investigators in their line of work. The plans and mechanism of every balloon ever constructed for aërial navigation were thoroughly examined by them. The mechanism of each was thoroughly gone into, even to the most minute detail. Many were improved upon, and made a part of the balloon "Akron." Many devices were invented, even after the "Akron" was constructed. Mr. Seiberling willingly financed this proposition and was a careful student, noting each improvement that was made by his faithful corps of aërial engineers. The loss of the lives of these investigators is a great loss to the present progress of aërial navigation and a loss greatly felt by the relatives and friends of the deceased.

* * *

The Electric Rubber Reclaiming Co. of Barberton has commenced reclaiming rubber.

* * *

The Firestone Tire and Rubber Co. has secured an insurance policy of $500,000 on the life of Harvey S. Firestone, its president. The yearly premium on the Firestone policy is $20,000. Mr. Firestone's health is of the best, this policy being taken out simply as a sound business proposition.

* * *

The Goodyear Tire and Rubber Co. has broken ground for a new building 400 by 80 and six stories high. This new building with other additions that the Goodyear company is making, will give additional floor space of 260,000 square feet. This marked enlargement will be used largely to take care of increase in its tire business.

* * *

A. E. Williams, formerly with The Firestone Tire and Rubber Co. and The S. & O. Engraving Co., has become advertising manager for The Swinehart Tire and Rubber Co.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

THE Thermoid Rubber Co., has installed a patent machine for the making of automobile tires, which the inventor claims will turn out six times as many tires per hour as are made now under the hand system. The Thermoid company is particularly busy just now, nearly every department working day and night shifts of men. The company is doing a fine business in the manufacture of brake linings, tires and tubes and belts, particularly belts. The demand for its brake linings for the auto trade is large. In the recent Indianapolis automobile meet, fourteen of the first sixteen cars to finish were equipped with the Thermoid brake lining. The hose department of the big plant is a trifle slack just now, a state of affairs general with the majority of the makers of hose in this vicinity.

* * *

Quite a good many men have been honored by having their friends and associates celebrate their fiftieth anniversary. General Murray, treasurer of the Empire Rubber Co., Trenton, New Jersey, has just enjoyed a unique distinction because his associates—evidently being unable to wait another year—have celebrated in a signal way his forty-ninth birthday. On July 17, when General Murray appeared at the office of his company, he was asked to go into the hoseroom to inspect a new machine.

Arriving there he found practically all the employes of the Empire Rubber Manufacturing Co. and the Empire Tire Co. Thereupon the assistant superintendent stepped forward and addressed the General in an exceedingly complimentary way, and in behalf of the body of employes presented him with a handsome diamond ring, together with a parchment containing the signatures of all the contributors—practically all the people connected with the company. The General was visibly affected, and with reason. It is a great honor to be highly esteemed by one's own workmen. It is about the most infallible criterion of character there is.

General Murray, in responding to Mr. Stokes, the assistant superintendent's presentation speech, said: "This token will, to my mind and recollection, ever sparkle with your esteem and friendship. It is not the intrinsic value of this very handsome diamond ring, but your esteem which goes with it that affords me more pleasure than money could purchase. It is impossible for me to say any more than that I sincerely appreciate your manifestation of esteem and only trust it may continue for the rest of my years."

* * *

Trenton's rubber industry is well represented in the summer colony at Spring Lake. John H. Broughton and Watson H. Linburg, of the United and Globe Rubber Co.; General C. Edward Murray, of the Empire Rubber Co.; Oliver and Robert Stokes, of the Thermoid Company; Charles and W. J. B. Stokes, of the Home Rubber Company; are summering at this seashore resort.

* * *

Local rubber manufacturers state that the outlook for a good season this fall and winter is particularly bright despite the usual pre-election complaints of the pessimistic element. The majority of the plants are running full handed, many working day and night shifts, particularly in the tire departments.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

IF the amount of "gumshoe" work in Chicago at present is any criterion the rubber trade could not be better. Third party talk and proposed tickets, hasty trips and conferences and general political activity, combine to make the season the most unique that ever preceded a presidential election. Consequently business in all lines has been partially lost sight of in the political maelstrom that envelops Chicago as the real center of the battle. Notwithstanding the well-understood conditions, there is no complaint from manufacturers or merchants, and both makers and jobbers of rubber goods appear to be enjoying an excellent trade.

* * *

In spite of freakish weather through the month, the manufacturers and dealers all express satisfaction, and commodities in the rubber goods business continue to have brisk call. Some few announcements have been made that tend to make for greater confidence, and in common with other business men the manufacturers and retailers of rubber goods are anticipating unusual prosperity this fall.

* * *

An increase of $6,000,000, or 150 per cent., in the capital stock has been agreed on by the directors of the Republic Rubber Co., whose Chicago office is at 1732 Michigan avenue. No definite announcement has been made as to the amount of additional capital to be issued this year. It is understood, however, that the steady growth of the company's immense business will require new capital before another season.

* * *

A contract has been entered into by the Knight automobile tire manufacturers with the Excelsior General Supply Co., 1432 Michigan avenue, whereby the latter is named as exclusive distributing agents for the Knight product in four States. The supply company will have supervision of the sales in Illinois, Southern Wisconsin, Northern Indiana and Eastern Iowa. The Knight tire is said to be the highest-priced automobile tire manufactured. It is made in Canton, O. "More per tire and less per mile," is the slogan of the company, and although their product is sold at high prices, it is backed by an exceptional mileage guarantee.

* * *

The first damage suit filed in Chicago as a result of the wreck and foundering of the giant steamer *Titanic* has been brought for the death of Abraham Willer, a former rubber clothing merchant in North State street. Willer went down on the ill-fated steamship and his widow has filed suit in the Superior court against the White Star Line Company for $10,000. The widow and three children are the plaintiffs in the action.

* * *

Fall buyers are overrunning the city and a very good percentage are boot and shoe dealers from various points through the central and western States. Wholesale boot and shoe firms report large orders. F. W. Campbell, secretary of the Western Association of Shoe Wholesalers, said: "Fall buying is already in full swing and prospects are that the wholesalers' sales will show an increase over all previous years. Late orders were the feature of last year sent in by the retailers to supply the unusual demand of late fall and winter, and this season the dealers are not to be caught napping."

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

A PERMIT has been granted to the Revere Rubber Co., of Providence to erect a five-story building on the east side of Eagle street, near Valley street, for storage purposes. It is to be of concrete and brick construction and will be as nearly fireproof as it is possible to make it.

The building will have all modern equipments and will be 72 feet from the ground floor to the roof. The frontage on Eagle street will be 77 feet. It will extend back 299 feet. C. Benson Wigton, of Boston, is the architect, and the Turner Construction Co. of New York, has the contract.

This structure is to provide storage place for tires, to replace the building which was recently burned. During the early part of July this company sent a check for $500 to the Providence Protective Firemen's Relief Association as a mark of appreciation for the excellent work done in fighting the fire which cost the lives of two firemen and resulted in a loss of $300,000.

* * *

The Alice Mill of the Woonsocket Rubber Co. was the scene of a rather remarkable accident some time ago. Augustus D. Clark, who lives at 138 West School street, Woonsocket, fell three stories down an elevator well but rose and walked out of the place without assistance, apparently uninjured.

He is an employe in the shipping department, and had ascended to the third floor in the elevator. As he alighted he found that men were sprinkling the floor preparatory to sweeping. He made a quick leap to get back on the elevator which had continued on its way up, but slipped and landed feet first at the bottom of the shaft. The doctor was unable to find anything the matter with the man later.

* * *

Terrence McCarty, formerly proprietor of The Consumers' Rubber Co., Bristol, and now its general manager for the Walpole Rubber Co., which has a controlling interest, has deeded the property to the latter concern. The papers were passed during the week of July 15.

* * *

The new wire molding plant of the National India Rubber Co. at Bristol is nearing completion. The floors of the building where the machinery is to be placed have been strengthened. It

is expected that operations will be started within a few weeks. Bristol business men are pleased at the prospect of a big increase in the population of the little town.

* * *

Almost simultaneously with the extension of the plant of the Phillips Insulated Wire Works at Darlington, Pawtucket, comes a much needed improvement in that section of the city. The City Council has made an appropriation for curbing and otherwise improving Central avenue, which passes in front of the plant and is the main avenue of travel to and from the center of the city.

* * *

Henry J. Doughty, who for a number of years was prominent in rubber manufacturing circles in Rhode Island, has entered politics actively since the Chicago convention at which ex-President Roosevelt failed to secure the Republican nomination.

Mr. Doughty came into the public eye recently by attending a meeting of Roosevelt supporters in New York and signing for Rhode Island the call for a Progressive Party convention in Chicago on August 5. Since then Mr. Doughty has started plans for getting out nomination papers in this State to insure Mr. Roosevelt the privilege of having his name on the ballots here. Heretofore, Mr. Doughty has not been actively interested in politics.

He states that he was asked to sign the call for the Progressive convention by H. R. Lowe, of Providence. He is a warm admirer of the former chief executive.

THE RUBBER TRADE IN SAN FRANCISCO.

By a Resident Correspondent.

REPORTS indicate that business is averaging up fairly well, with some improvement over the same time last year. Yet a great many men are now away on their vacation trips, and as one man said, they are not missed, which would make it appear that those who remain are amply sufficient to handle the business at the present time. In spite of the fact that this has been a comparatively dry season, however, the demand from the mines and mills has been considerable, and the mechanical business has not been as quiet as some had feared it might be. The automobile tire business is most active of all. This has of course been the case for a long time, but when the price cutting commenced there was some fear that the tire business would suffer. During the period of heavy cutting, of course, some people stocked up, and it has taken a little time for conditions to become adjusted.

* * *

W. L. Eaton, with the San Francisco branch of the New York Belting and Packing Co., is preparing to leave for a month's fishing trip in the mountains near Klamath, Oregon. This is supposed to be the best fishing country in the United States, where salmon and trout both abound and put up a great fight before they are landed.

* * *

The Pacific Mill and Mine Supply Co. is doing a good business in its line, notwithstanding the claim that rubber is being driven out of the belting business. "The automobile tire is to blame," they say. "People are getting tired of the prices, and so whenever a new belt comes out made up of a new preparation, they take some for trial, and the market for rubber belting is not very brisk." This firm has a branch store in Los Angeles, and business at the branch store is booming.

* * *

The B. F. Goodrich Co. reports a big sale during the past few weeks of garden hose, from orders sent in by their traveling men. This firm has made a few changes in its selling force and is getting everything systematized for a big campaign beginning with fall. This company has organized a baseball team among its employes, and the team went forth and met the unbeatable organization which is made up of the factory employes of the American Rubber Manufacturing Co. According to its custom, the latter team carried off the victory with ease. The Goodrich team is being strengthened, and when a return match is held, promises to produce a great deal more talent in all departments of the nine.

* * *

A. W. Smith, of the Goodyear India Rubber Glove Co., is now visiting in San Francisco. This is his regular annual trip, and he reports that he finds conditions on the coast rapidly improving.

* * *

The Gorham-Revere Rubber Co. continues to enjoy a steady and profitable business in all departments, although the tire end of the business is mentioned as being particularly good. Mr. Brady has returned from a trip through the branches in the northwest, and he reports a vast improvement in the northern territory. "Business is fine in the northwest," he said, "and I was most agreeably surprised to find such progress. I found business warranted additional help in a number of the stores, and consequently added a number of new men."

W. J. Gorham, of the Gorham-Revere Rubber Co., who is interested also in a new pump which his son is perfecting, has an order from the city of San Diego for his pump and engine apparatus to the extent of $65,000. He now has one of his engines and pumps set up for the city of Oakland, which is pumping several hundreds of gallons more than the specifications call for, and to all appearances he has a pump that will do the work demanded. It is intended for automobile fire apparatus, the engine used being the same which drives the automobile.

* * *

San Francisco has practically decided, after tests held last week, to substitute automobile fire engines in place of those driven by horse power. The tests were made with a heavy engine with solid rubber tires, and yet this apparatus made the distance in one-half the time that it took the horses. Engines equipped wih pneumatic tires can increase the speed.

* * *

The city of San Francisco will have fire-hose specifications out this week, and will probably have the bids in by the middle of next month or before. The city has introduced some of the iron-clad specifications which it had one time eliminated, but nobody knows yet just what they are.

* * *

Bids have been opened in Portland, Oregon, for 6,000 feet of fire-hose, and considerable activity has been shown in the bidding. In fact the hose men are full of business just now. This is the end of the fiscal year for many small towns, which are now getting in their tax money, and these towns are coming into the market for fire hose.

RUBBER MILL MACHINERY FOR SALE—Continued.

FOR SALE—Duck slitter, latest improved—Farrel Foundry & Machine Co. make—used only three (3) months. Address Box No. 1060, care of THE INDIA RUBBER WORLD.

FOR SALE CHEAP—Four (4) slightly used John E. Thropp Sons' jar ring lathes. Address Box No. 1062, care of THE INDIA RUBBER WORLD.

A large lot of rubber mill machinery for sale. One (1) new 20-ram Birmingham press, 20' long by 4' 7" wide, with corrugated platen. This press was never used. One (1) 4-roll 20 x 61 calender and about seven (7) other calenders from the small experimental up to 60". A large lot of mills, washers, crackers, blowers, tubing machines, churns, hydraulic presses, hand presses of all sizes, horse shoe pad moulds, hose-wrapping machines, air-brake wrapping machines, engines, pumps, boilers and other rubber mill machinery too numerous to mention. For sale cheap for cash. Apply to PHILIP MCGROBY, Trenton, N. J. (973)

RUBBER MILL MACHINERY WANTED.

WANTED—One (1) washer, one (1) mill about 40 inches, one (1) three (3) roll calender that is geared for friction and even motion. Would prefer to purchase machines that are now being used, with privilege of examining. Address Box No. 1059, care of THE INDIA RUBBER WORLD.

WANTED—Second-hand three-roll stock calender in good condition; 42-inch or 48-inch roll. Address Box No. 1065, care of THE INDIA RUBBER WORLD.

WANTED—Second-hand No. 4 Royle Perfected Tubing Machine. Must be in good condition. Address Box No. 307, PERTH AMBOY, NEW JERSEY. (1066)

A view of a portion of our Molded Goods Department.

Goodrich Molded Goods

There is no rubber factory in the world so comprehensively equipped to turn out molded goods as this department of our business. We have our own machine shop, which is devoted to making molds for this class of work, and customers receive the benefit of these facilities and our extensive experience in proper and economical mold construction.

We are always glad to submit prices and samples, whether the article is new or already in use.

THE B.F. GOODRICH CO.
AKRON, OHIO, U.S.A.

NEW YORK BELTING & PACKING CO. LTD

ORIGINAL MANUFACTURERS

INTERLOCKING RUBBER TILING.

IT IS THE BEST FLOOR MADE
FOR CHURCHES, SCHOOLS, BANKS, PUBLIC BUILDINGS, THEATRES AND PRIVATE RESIDENCES, BEING SANITARY, NON-SLIPPERY, SOFT AND COMFORTABLE TO THE TREAD, BEAUTIFUL IN COLORS AND DESIGNS AND DURABLE.

NEW YORK 91-93 CHAMBERS ST. — CHICAGO, ILL. 130 WEST LAKE ST.
ST. LOUIS, MO. 218-220 CHESTNUT ST. — PHILADELPHIA, PA. 821-823 ARCH ST.
SAN FRANCISCO, CALIF. 129-131 FIRST ST. — BOSTON, MASS. 232 SUMMER ST.
SPOKANE, WASH. 165 S. LINCOLN ST. — PITTSBURGH, PA. 420 FIRST AVE.
PORTLAND, ORE. 40 FIRST ST. — LONDON, ENGLAND, 9-13 SOUTHAMPTON ROW.

ECCE SIGNUM.

THOROUGHLY RELIABLE.

The policy of furnishing only the finest goods that can be produced with perfect materials, latest and best machinery, and highly skilled workmen of long experience, has been, is now, and will continue to be, the policy of

The Mechanical Rubber Company,

CHICAGO, ILL.

Branch Store, No. 1810 Blake Street, Denver, Colo., where we carry a full line of goods.

Manufacturers of all kinds of rubber goods for mechanical uses—Hose, Belting, Packing, Gaskets, Bicycle Tires, Specialties, Moulded Goods, Etc., Etc.

If you are unable to satisfy your trade with goods you are supplying,
If you are in search of good goods at fair prices,
If you cannot get quick deliveries,
If you are not getting fair value for your money,
IN ANY EVENT,

SEND TO US FOR SAMPLES AND QUOTATIONS. . . . .
WE CAN SUIT YOU EVERY WAY.

FACTORY, GRAND AVE. & ROCKWELL STS

THE MECHANICAL RUBBER CO., 230 Randolph St., Chicago, Ill.

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

WHEN referring to this matter in my notes last month, I did not anticipate that the publication of my remarks would have synchronized with widespread and lengthy reference to the topic in the daily press. The latter resulted from the paper read by Professor Perkin on June 17 before the London Section of the Society of Chemical Industry. The main fact of interest in the paper was the announcement that one of his colleagues in this research, Professor Fernbach of the Pasteur Institute, Paris, had successfully solved the problem of the transformation of starch into the higher alcohols by fermentation, and at a cost which would enable the product butadiene to be polymerized into rubber by metallic sodium, so as to compete in the market with natural rubber. In the numerous articles in the press the public have been let a good deal into the mysteries of the higher alcohols, a subject which is not particularly easy of comprehension to those without any acquaintance with organic chemistry. On the present occasion I do not propose to go into detail, but an important fact, or one which is presumably important, has been generally ignored, and to the best of my knowledge has only received mention in the "India-Rubber Journal," and in the remarks contributed by Mr. B. Blount to the "Morning Post." That point is that the new fermentation process is not really a cheap process of preparing isoprene, but its homologue-butadiene. Both of these bodies yield a rubber-like substance when polymerized by metallic sodium; but whereas the isoprene rubber has the same chemical structure as natural rubber the butadiene rubber differs in having one atom of carbon less. Of course the mere fact of this difference in chemical structure proves nothing against the new rubber; it may for all we know be a point in its favor. Still it forms an interesting point for examination. Synthetic rubber made, I understand, from isoprene has already reached the stage of being made into tires in Germany, and it is said to have resisted wear and tear better than the natural rubber. It now remains for the same thing to be done with butadiene rubber—to prove its value. In the meantime criticisms of this sort are useful to cheer up the drooping spirits of rubber plantation shareholders. It will probably be at least three years before the synthetic product makes any effect upon the market; but the announcement certainly had the immediate effect of depressing values upon the Stock Exchange, losses being shown on every quotation except one on the 20th of June following the publication of the details of the process on the 19th. The financial papers talk of the reappearance of the synthetic rubber bogey, and affect a tone of incredulity as to there being anything in it. Everything of course depends upon the price at which it can be produced. Professor Perkin talks airily of 1*s.* per lb., but as the experiments have not yet emerged from the laboratory stage, I don't see how the estimated working costs can be based on any sure foundation. This more particularly in regard to the fermentation part of the process, which has only been discovered a very short time. It is stated that the fusel-oil yielding the butadiene will not cost more than about £35 per ton, or about one-fifth its present price, and it may yet turn out that the estimated cost is unduly optimistic. Recently two or three forward contracts for plantation Pará over 1913 have been made at 4*s.* 6*d.* per pound, an indication of the opinion of the stability of present prices for some time to come. The shooting of the synthetic bolt will probably result in an increased desire on the part of plantation directors to sell for forward delivery, and it will be interesting to see what effect the synthetic announcement will make upon the prices.

SYNTHETIC RUBBER.

Since writing the above the prospectus of the Synthetic Products Co., Limited, has appeared with a capital of £500,000. Profits are to be earned at first upon the acetone and fusel oil, and the potential wealth to be derived from synthetic rubber is a matter for a year or two ahead when the manufacturing details have been thoroughly worked out. Certainly no very great progress has as yet been made, as only a few pounds of somewhat doubtful rubber have as yet been produced. The name of Dr. Goldsmith, who makes a report in the prospectus on the rubber, is not a particularly familiar one to rubber men; in saying which I don't wish to be understood as making any reflection upon the report. Of course it is only natural that those who see their interests threatened by new discoveries should attempt to belittle these, and it is rather important for outsiders to distinguish between the published criticisms of chemists, botanists, etc. in the pay of plantation companies, and others who write as disinterested persons. I don't know how the subscriptions to the new company have come in, but from general conversation I gather that much importance is attached to the statement that tires have been made of synthetic rubber in Germany with excellent results, and the general feeling is expressed that if the new company's product had arrived at the same stage, the issue would have been at once oversubscribed. Of course this may have been the case as it is, but there is no information on the point at the time of writing. But I must not occupy more space with this interesting topic, especially as it will no doubt be dealt with in our editorial columns.

THIS article is being increasingly used in England, especially in grain elevators, flour mills, oil seed crushing works, etc., and like the bulk of rubber articles the rubber mixing, owing to competition, shows a continual decline in quality. Of course there is not the same friction in the above cases, as is experienced by ore conveying belts, and a low quality rubber is in most cases considered good enough. Some firms when buying new belts get samples and submit the rubber to an expert, but the more general course is to rely on a mechanical test which determines the strength or weight necessary to part the layers of rubbered canvas. In the case of the belting just supplied to a large new seed crushing mill in the north of England, nothing was said by the buyers as to the quality of the rubber, but the manufacturers had to guarantee the belt to stand definite mechanical strength tests specified by the buyers. I am told of rubber belting used for grain having lasted thirty years, which I should imagine is much beyond the life of many belts of today's make. With regard, however, to the large diameter suction tubing used in grain elevators, the life is usually very short, the corn having a surprisingly strong cohesive action, and it would seem that here there is room for research and improvement.

CONVEYOR BELTING.

THIS year's list of honors and promotions included the name of Mr. F. H. Smith, who received a baronetcy. Sir Frederick Smith recently succeeded Mr. Arthur Birley as chairman of Messrs. Chas. Macintosh & Co., Limited, with which firm he has been associated for about ten years, and upon the fortunes of which, I believe it is not too much to say, his wide commercial experience has made its mark. This firm, however, affords an outlet for only a portion of his energies, as he is chairman or director of several other important concerns, including a colliery, and the cotton spinning business founded by his grandfather about 100 years ago. The new baronet is a well-known temperance advocate, and is of course a liberal in politics, seeing

A BIRTHDAY HONOR.

that his honor is bestowed during a liberal administration. In this respect he is in the opposite camp to his co-directors of Messrs. Chas. Macintosh and Co., the Birley family being among the most stalwart of Manchester conservatives. This baronetcy, by the way, it is interesting to recall, is not the first that has been offered to the Cambridge street firm, for thirty or forty years ago the conservatives offered one to Mr. Thomas Hornby Birley, who, however, declined it.

A LITTLE KNOWN USE FOR RUBBER.

ALTHOUGH I take credit to myself for knowing the great bulk of the purposes to which rubber is applied, I occasionally come across applications of it which are novel to me. The latest is in connection with the art of book lettering with gold leaf. Unvulcanized rubber prepared in a special way is used by the artificers who do book lettering for printers, for the purpose of picking up the overflow of gold leaf. Gentle pressure causes the leaf to adhere to the rubber, and when this contains too much of the gold to be serviceable, it is sold to the gold beaters, who burn off the rubber and recover the gold for use over again. At least this is the regular practice in Great Britain. Where the substitute known as Dutch gold is used the recovery of the waste is not a matter of importance, nor is it where the nitrocellulose imitation leaf is employed. This latter, I understand, is made and used to a considerable extent in the United States.

BILLIARD TABLE CUSHIONS.

I LISTENED the other day to a discussion on this subject, one of the speakers saying that the rubber on a table which he knew had not been touched for forty years was still quite sound. With rubber cushions of more modern make, he said, anything like such longevity was unheard of, this being due, he went on to say, to the poor quality of rubber now used. As I was refused an opportunity of testing a piece of the long-lived cushion referred to, I cannot say whether it was vulcanized or not, though it may be taken for granted that it contained a higher percentage of pure rubber than is customary today. I note in connection with this matter that in William Brockedon's patent of November 19, 1846, shortly after Parkes' discovery of the cold cure, he mentions the manufacture of billiard cushions as one of the purposes for which the change, *i. e.*, the vulcanization by dipping can be used. The cushions were prepared by the union of a number of sheets of rubber, or of rubber and gutta percha, which were then immersed. This of course means a very superficial cure and the bulk of the material would be pure rubber.

A NEW PATENT.

THE British patent No. 11482—1911, of Terry, Spencer and Curbishley for the reclaiming of waste rubber, calls for a word of reference, if only for the long association of the patentees with the rubber trade. It will be noticed that reference is made only to waste rubber, those elusive bodies so dear to the heart of the patent agent, viz., "allied gums," having no mention. It is also refreshing to see that no claim is made that the rubber is restored to a state of "pristine purity." The claim is limited to the use of one salt, magnesium chloride, which has the property of dissociating under heat, and no attempt is made to include the bulk of the substances named in chemical text books, by using the expression "such as for instance magnesium chloride." I am precluded from saying much about the actual merits of the new process, for reasons which will be obvious to some of my readers; but I may be allowed to say that in one respect, at any rate, it shows an advance on a good many previous reclaiming patents, in that it is in actual use and the products on the market. It might be thought that the reclaiming business was being overdone, but most of the works report themselves as busy, and doubtless reclaimed rubber is being used to a much larger extent today than it was a few years ago. In the patent under mention, high pressure digesters are used as in the alkali processes, there being only three reclaiming works, I understand, in England where the high pressure system is adopted.

NORTH BRITISH RUBBER CO., LIMITED.

A. C. Baker having found it necessary, owing to reasons of health, to relinquish his position as general manager of the North British Rubber Co., Limited, Edinburgh, has taken the post of sales manager of the company, with headquarters at London.

At a recent meeting of the board of directors Alexander Johnston was appointed general manager in Mr. Baker's place, G. A. Findlay was appointed secretary to the company, and W. A. Williams was appointed to the position of general works superintendent.

ENGLAND'S FOREIGN AND COLONIAL TRADE.

Comparative figures issued by the British Board of Trade (converted into American currency) show the following exports:

	To Foreign Countries.	To British Possessions.
1907	$1,439,456,585	$690,718,880
1908	1,251,693,985	643,825,135
1909	1,254,711,315	636,190,420
1910	1,413,409,153	736,514,710
1911	1,476,375,770	794,220,720

Thus, while England's foreign trade only shows for five years a net increase of about 2 per cent., her colonial commerce has advanced about 15 per cent. The grand total of British exports for calendar year 1911 equals $2,270,596,490, as compared with a total for United States exports of $2,058,413,224.

While with over 2 billions of exports, the United States nearly caught up with England in the calendar year 1911, the following comparative figures applying to the first four months of 1911 and 1912 show this country distinctly in the lead:

EXPORTS FOR FIRST FOUR MONTHS (domestic manufactures).

	1911.	1912.
United States	$709,925,000	$807,630,000
United Kingdom	749,900,000	757,540,000
Germany	627,650,000	685,180,000
France	394,300,000	420,370,000
Belgium	225,375,000	234,675,000

The figures of the fiscal year ending June 30 will doubtless show proportionate results.

SEASONS FOR RUBBER GOODS.

According to a German view, the steady trade enjoyed by many German rubber goods factories, is due to the distribution of business into seasons, occurring at various times of the year. In the distribution of rubber goods, there are seasons for selling devices for sports and games, like balls; rubber garments, hose, bottle disks, bath requisites, etc. Of these various seasons the most important converge into the spring. As to pneumatic tires, it is added that the use of automobiles has become so general and continuous, that their sale is hardly any longer connected with any particular season, although it is largest from March to May.

AUSTRALIAN RUBBER.

According to the "Financial News" of London, the cultivation of Pará rubber is beginning to assume some promise of advancement in the north of Queensland. Some years back a shipment of plants arrived from Singapore, and these were distributed by the government to intending cultivators. The plants are growing well, and before long should reap a rich harvest for the farmer. Queensland's tropical lands are considered to be well adapted for rubber growing; the cultivation is simple and comparatively inexpensive, and demand for the product is always brisk. Ere long the production of rubber is thought certain to become one to the most important industries in Queensland.

The Australian "Official Year Book" states that there is in Queensland a forest plantation of 310 acres, as well as 8 experimental farms, with a total planted area of 872 acres. While these lands are not stated to be growing rubber, it is of interest to note that the general principle of experimental cultivation is being carried out in Queensland.

PASSAGE OF HYDROGEN THROUGH RUBBERED AEROSTAT FABRICS.

IN a communication from M. G. Austerweil, presented to the French Academy of Sciences in January last, attention is called to the fact that the escape of hydrogen through rubberized fabrics, has long been attributed to the diffusion of the gas through the pores of the rubber. This supposition, it is added, may have been correct as to fabrics in which the rubber is deteriorated by resinification, but if the covering is intact, or when tested only shows slight escapes, it will still be found that after the aerostat has been inflated for 25 to 70 days, according to the season and temperature, there is an escape of hydrogen through the fabric and a simultaneous entrance of air, as Graham has demonstrated in the past.

Experiments on the fabric of the "Astra-Torres" balloon have demonstrated that its impermeability is essentially variable with the duration of its inflation—that is, with the length of time it has been in contact with the hydrogen. The fabric regains its impermeability some time after deflation has taken place.

As the loss of gas is a reversible phenomenon it therefore cannot, it is added, be attributed to a change in the rubber, which is irreversible.

Under these circumstances, it becomes necessary to seek the real cause in a reversible phenomenon, which takes place in the body of the fabric. This is nothing else than the absorption of the hydrogen by the rubber. It is, morover, known from Dittmar's researches that rubber absorbs certain gases, while Reychler has demonstrated such to be the case as to sulphurous anhydride.

After a certain period of inflation the covering no longer consists of pure rubber, but of a combination of rubber and hydrogen, in which osmosis becomes possible and is all the more intense, according to the greater proportion of hydrogen. This proportion increases with the duration of the contact between the hydrogen and the rubber; therefore with the duration of the inflation of the balloon.

If the aerostat is then deflated, the fabric, impregnated with hydrogen, will, on being tested, show a very considerable escape, but as the covering of rubber remains in contact with the air, the rubber-hydrogen combination will be decomposed, the hydrogen will be thrown off, and by degrees the fabric will regain its original impermeability.

PROPOSED FRENCH OFFICIAL RUBBER LABORATORY.

MANY of the questions affecting raw silk being more or less applicable to crude rubber, it is of interest to note that M. G. Vernet, the rubber expert, recently paid a visit of inspection to the Lyons *Condition des Soies*, or official silk laboratory, where the percentage of humidity in silk is officially defined. The process consists in the preliminary determination of the absolute dry weight, by submitting samples to the influence of heat until every particle of moisture is extracted. For the purpose of establishing the "condition weight" for which the buyer pays, an addition is made representing 9 per cent. of natural moisture, so that when silk is exceptionally dry the condition weight exceeds the original weight. Various other tests of the count of the silk, its elongation and other points, are not applicable in their present form to rubber, but the principal test, that of moisture, is one which applies to both materials.

According to the French system, the silk conditioned is warehoused under the responsibility of the condition house, so that the certificate of the condition weight becomes practically a guarantee for the buyer that the silk he is receiving weighed so much at a given date.

In addition to the weight, the condition house, according to M. Vernet's suggestion, would report on the shape, thickness and color of the rubber, loss in washing and the appearance and color of the washed rubber after drying. Other points to be reported upon would include the proportion and nature of resins soluble in acetone, proportion of oxygen in the washed rubber; proportions of azote and albuminoids. These results would permit the definition of the proportion of pure rubber. The nature and percentage of ash would also be shown, as well as the resistance to heat in a stove at 55 degs. C. (131 degs. F.), and the plasticity of the washed rubber. The height of rebound of a ball dropped from a given height would also be noted.

Among other tests which M. Vernet suggests being made by the condition house are: viscosity of solutions, solubility of rubbers in different re-agents, adhesive properties of natural rubber and of rubber obtained by the evaporation of the solvent, as well as dynamometric and mechanical tests.

Condition houses of the same nature as that of Lyons, are established at the principal centres of the European silk industry; as well as in New York.

GUARANTEES OF RUBBER TRANSMISSION BELTING.

AS already recorded, a committee was appointed at the recent congress of German Rubber Goods Manufacturers to investigate the question of introducing uniform terms of guarantee for rubber transmission belting.

In discussing this subject, since the appointment of the abovenamed committee, a writer in the "Gummi Zeitung" defends the proposal on the ground that while a general guarantee of serviceability is afforded by the law, the valuable character of various manufacturing accessories, such as belting, justifies the demand for specific guarantees. Purchasers will never be satisfied with a mere guarantee of regular and faultless quality. They require an engagement to replace the belting, in case it proves unserviceable before the expiration of the period for which it is guaranteed, when it has been subjected to ordinary wear.

In the interest of the belting manufacturer, where replacement is being provided for, a special stipulation is considered advisable for careful treatment and regular usage. The party using the belting will, as a rule, never be disposed to admit negligence in its treatment, while it is usually difficult for the manufacturer to adduce such proofs on that subject as will relieve him from responsibility. With rubber belting a good many causes of trouble can be foreseen, and the opinion is expressed that cases attributable to faulty usage should be specifically excepted. Such cases, for which the maker of the belting should not be held responsible, include defective arrangement or working of the pulleys, or defects in the pulleys themselves. Where such stipulations are made, the user will naturally see, when the belting is being installed, that the pulley-bearings and other mechanical accessories are in proper order. A good deal is gained by such a precaution, as otherwise the guarantee might prove misleading.

With regard to the duration of the guarantee, that question, it is remarked, is less important than the correct definition of the responsibilities undertaken. The unfavorable consequences of guarantees sometimes reported, are usually the result of too low a price with too long a guarantee. In conjunction with the latter there should be a price paid which would allow of a proper selection of material, the quality of rubber belting exercising, of course, a marked influence upon its durability. The duration of the guarantee would naturally be longer in a high-priced quality than in a cheap belting. By making the guarantee dependent upon the price, the belting manufacturer will be spared much anxiety. In any case the minimum guarantee of six months calls for a quality not to be made of every cheap ma-

terial. A guarantee covering only noticeable defects and excluding responsibility for wear, is so far unfavorable to the user. Thus a belting of such poor quality as to become useless after a few weeks would give just cause for complaint, even in the absence of visible defects. Qualities, it is added, which do not last at least six months, do harm to the whole belting industry.

Moreover, no belting manufacturer should hesitate about undertaking a guarantee of longer than six months, but should be guided by the price. It would not be difficult, it is added, to establish a scale of proportion between thickness, price and duration of the guarantee to be undertaken for rubber belting. The nature of the work has, of course, a material influence upon the life of the belting.

While abuses have in some cases resulted from the improper use of guarantees, to the detriment of belting manufacturers, the opinion is expressed that they cannot be dispensed with. The buyer will not and can not, in his own protection, abstain from asking a guarantee. It is only necessary to look at such an engagement in the same light as any other contract, and so to protect the interests of both parties, that it may give mutual satisfaction.

VIEWS OF GERMAN MANUFACTURERS ON BELTING GUARANTEES.

As the result of a circular letter addressed to the members of the Central Association of German Rubber Goods Manufacturers, it has been found that a guarantee on rubber belting for day work of a year, and for day and night work of six months, was generally recommended as a normal maximum. Such a guarantee would be limited to defects in material and working.

The further elaboration of the proposed guarantees has been placed in the hands of the Continental Caoutchouc and Gutta Percha Co., of Hanover, and the Rheinische Gummiwaren-Fabrik, Franz Clouth, of Cologne; members of the above named association.

THE GERMAN ARMY STILL USING DIRIGIBLES.

The appalling fate of the Vaniman balloon does not appear to deter the German military authorities from further experimenting with dirigibles as an accessory to army movements. The German authorities have just completed the purchase of the Siemens-Schuckert dirigible balloon, the greatest non-rigid airship in the world. It has a speed of over forty-three miles an hour.

TARIFF REFORM IN HOLLAND.

While the total United States exports of manufactures of rubber to the Netherlands for the fiscal year 1911 only represented $48,240, rubber manufacturers doing business with that country will do well to watch the possibilities of the increased trade which always precedes an advance in tariff.

Holland has hitherto been practically a free trade country, levying on imports only an *ad valorem* duty of 5 per cent. By the measure now under consideration, three broad groups of dutiable articles are dealt with: semi-manufactured articles, 3 to 6 per cent.; doors, window frames, and similar articles for use in further operations 10 per cent.; manufactures available for consumption as they are, 12 per cent.

The free list is a large one and includes various descriptions of machinery, while the duties on carriages and motors are increased. Owing to the opposition the measure called forth, it is now being studied by a government committee, but is still a factor deserving of consideration.

Replete with information for rubber manufacturers: Mr. Pearson's "Crude Rubber and Compounding Ingredients."

RUBBER GOODS IN MODERN TRAVELING.

TRAVELING has become such a characteristic feature of modern life, that in some European resorts the stream of visitors practically never ceases. This is particularly the case at some of the Mid-German points, where the season proper lasts from May to November, with the addition of a winter season prolonged until April. This double season, unknown ten years ago, is more frequently met with as the Alpine regions are approached.

One of the first results of this new development of traveling is the improved comfort provided by hotels for their visitors. In catering to the more exacting requirements of travelers first-class hotels (as a writer in the "Gummi-Zeitung" points out), cannot do without rubber in its various forms. When leaving the station on arrival, the traveler's luggage is carried to the hotel auto by a porter wearing noiseless rubber heels, while the auto itself conveys him to his destination on rubber tires. The steps of the auto-bus have rubber covering and the floor is covered with rubber matting. The rattling of the windows is prevented by a U-shaped foundation of rubber, while the heavy luggage is carried up a ladder with rubber-covered rungs to the roof of the vehicle. On wet days the hotel servants and the chauffeur wear rubber clothing.

The vehicle proceeds through the streets to the hotel, which the traveler enters through rotating doors, the sides of which are provided with strips of rubber, so as to exclude draughts. He reaches the vestibule, which is covered with an immense rubber mat, bearing the name of the hotel in large blue or red letters. Passing over the rubber stair covering, made to suit the width of the marble staircase, he reaches the hotel office, being then conducted to the elevator over rubber-tiled flooring by noiseless attendants wearing rubber shoes.

Meanwhile his luggage has been placed in his room on stands covered with rubber, while the doors and windows are provided with rubber strips. The bedsteads rest on rubber pads in order to prevent noise. The doors leading to the adjoining rooms have rubber strips for excluding sound, while the telephone at the writing desk has a receiver and other parts of hard rubber, with antiseptic protective mouthpiece of the same material.

The bathroom has an anti-slipping rubber mat; rubber tubing conveying hot water to the foot bath and sitz bath. At the douche is a curtain of rubberized fabric. After the bath the traveler steps on to a rubber-sponge mat, where he dries himself.

Having been thus "humanized," bodily sustenance next claims the voyager's attention. On his way to the dining room he passes by numerous doors, each with a rubber mat of uniform size. When the dining room is reached he notices the waiters first adjust the tables and chairs, the rubber casters of which permit noiseless movement; the ladies' chairs being provided with rubber air cushions. Every separate course is served on a small rubber-wheeled table.

If the traveler then wishes to patronize the "Kursaal" he can there try his luck at the "Jeu de Boule" in which a rubber ball may win or lose money for him. Variety in play can be obtained by the use of hard-rubber dice. In the restaurant the bottle of wine he orders is served on a hard-rubber plate, polished like ebony.

Should there be a storm there is an opportunity for the display of ladies' raincoats, hurriedly fetched from the hotel and showing the latest Paris novelties in that line.

Rubber forms an essential feature of modern railway service, through the adoption of many hotel conveniences. The traveler, whether in motion or at rest, benefits all the time by the skill and enterprise with which that material has been adapted to the needs of modern life as a factor in its necessities and luxuries.

Important Japanese Companies

By Our Regular Correspondent.

TSUDA COMPANY (PARTNERSHIP).

ALTHOUGH the registration of this company as a partnership only dates from August, 1906, it is the oldest electric wire plant in Japan. Some sixty years ago it began to manufacture copper wire, and was still doing so in 1880, when further developments of the electrical industry took place.

In that year, with a view of meeting the demand then opening, the company started the manufacture of copper wire for telephones, being the first concern in Japan to do so. When in 1884 electric lighting began to assume importance, the company undertook the manufacture of cotton-braided copper wire, which it supplied to many Japanese electric light companies. Following up the other applications of electricity, the company subsequently commenced to manufacture copper wire for electric car purposes.

The products of the Tsuda Company are now therefore rubber wires and cotton-braided wires, subjected to tests of high insulating and high-pressure apparatus, as well as copper wires for electric cars and other purposes. The total annual value of the product amounts to $4,500,000, while its distribution extends to Japan, Corea, Manchuria and China. The various plants operated by the company are as follows:

(1) Copper works at Fushimi.
(2) Tubing and braiding factories at three points.
(3) Finishing factory at Fushimi-Yamaski-Cho, Kyoto-Fu.

In all, the plants occupy an area of about six acres, of which one-half is built upon, while the installation includes:

20 Copper wire manufacturing machines;
4 Rubber washing and mixing rolls and calenders;
2 Rubber tubing machines;
2 Stranding machines;
370 Braiding machines;
3 Rubber taping machines.

The motive power comprises:

Boilers—One 150 H.P., one 35 H.P.;
Turbine—One 200 H.P.;
Dynamo—One 85 H.P.

The working staff numbers 284 male and 95 female hands. The company's representative is Mr. Kosaburo Tsuda.

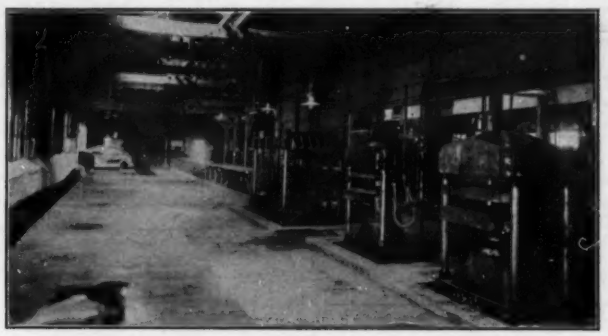
WASHING ROLL, MIXING ROLL AND CALENDER.
KAKUICHI RUBBER CO.

KAKUICHI RUBBER CO. (LIMITED PARTNERSHIP).

This concern is one of the largest Japanese rubber manufacturing companies, and is situated at Osaka. The owners of the concern are Messrs. Kinjino and Ilikotaro Abe, belonging to one of the wealthiest Osaka families. The capital (all paid up), is $100,000. Originally established in 1906 as the Kakuichi Rubber Works, it was registered as a limited partnership under its present title in March, 1910.

Its manufactures include rubber rolls, plates and tubes; ebonite; cycle and jinrikisha tires, as well as other goods for railways and ships. It also makes surgical and electrical instruments. The motive power includes:

2 Boilers, each 50 H.P.;
1 Compound engine, 120 H. P.,
(all made in Japan.)



HYDRAULIC VULCANIZING PRESS ROOM.
THE KAKUICHI RUBBER CO.

The machinery was imported from England or the United States, and comprises:

2 washing rolls, 7 mixing rolls, 2 calenders, 2 hydraulic pumps, 3 vulcanizing presses, 3 hydraulic vulcanizing presses, 14 vulcanizing pans, 3 tubing machines, 2 braiding machines, 1 accumulator weight, 2 cloth wrapping machines, 1 coiling machine, 1 spreading machine.

In addition to these imported machines, there is a cutting machine for rubber "tabi" soles, constructed in Japan, besides some 2,000 molds of Japanese manufacture.

There is a complete machine shop for the repair of machinery and the manufacture of molds. The staff numbers 150 hands, part of each sex. The area occupied by the company is a little over one acre, about two-thirds of which is covered by the ten factory buildings.

The company has been awarded three gold medals, in addition to one silver and one copper medal.

Annexed illustrations show two interior views of the Kakuichi factory. One represents the rubber washing and mixing rolls and calender, while the other shows the vulcanizing press room.

NEW EUROPEAN RUBBER FACTORIES.

A new company styled "Austria," has been registered at Tetschen, Bohemia, for the manufacture of stuffing-box packings.

The erection of a factory, to make hard and soft rubber goods, for surgical and technical purposes, is said to be contemplated at Lisbon, Portugal. Reports state that the business is being started by the Société Industrielle du Caoutchouc, of Paris, under local management in Lisbon.

Reports from Hanover state that the recently established regenerating concern, the Hannoversche Gummi-Regenerier Werke Luttermann & Co., Hanover, has erected a factory, with an up-to-date equipment, every effort having been directed to rendering the installation as complete as possible.

Some Rubber Planting Notes.

SOME SUMATRA STATISTICS.

RECENTLY published statistics affecting the East Coast of Sumatra show that the number of rubber estates had increased from 100 in 1910 to 120 in 1911. The number of trees is put at 18,000,000. The total rubber exports from various districts were:

	1910. Kilos.	1911. Kilos.
Balawan	390,282	547,270
Tanjong Balai	17,667	14,078
Tanjong Tiram	37,705	84,992
Tanjong Poera	12,138	21,652
Total	457,792	667,992

This increase of nearly 50 per cent. shows what may be expected from Sumatra in the future.

SUMATRA VS. STRAITS.

The June reports of Messrs. Harrison & Crosfield, Limited, include the following results for that month, which indicate the increase of yield is still making progress, with every prospect of being maintained:

	June, 1911. *pounds.*	June, 1912. *pounds.*
STRAITS COMPANIES.		
Anglo-Malay	54,347	61,966
Bikam	8,301	11,324
Golden Hope	9,030	10,498
London-Asiatic	23,905	54,606
Pataling	21,833	32,134
Seaport	2,795	13,684
Selaba	15,974	24,233
Sungkai-Chumor	4,122	18,000
Tangkah	1,961	5,518
Totals	142,268 pounds.	231,963 pounds.
SUMATRA COMPANIES.		
United Serdang	21,129	61,612
Sialang Rubber Estates	4,326	15,664
Totals	25,455 pounds.	77,276 pounds.

BIKAM RUBBER ESTATES, LIMITED. (FEDERATED MALAY STATES.)

In addition to a balance of 13,440 pounds deliverable under forward contracts at an average gross price of 5*s.* 2*d.* ($1.26) per pound, this company has sold for 1913 delivery 36,000 pounds at 4*s.* 9*d.* ($1.16).

LONDON ASIATIC RUBBER AND PRODUCE CO., LIMITED. (FEDERATED MALAY STATES.)

Out of the 274,311 pounds harvested during the six months ending June 30, 1912, 82,853 pounds have been sold at an average gross price of 4*s.* 6.57*d.* per pound ($1.11). There still remain to be delivered under forward contracts:

During 1912, 107,520 pounds at 4*s.* 6.88*d.* ($1.11).
During 1913, 108,000 pounds at 4*s.* 7.72*d.* ($1.13).

These forward sales indicate confidence on the part of buyers and must be gratifying to sellers, seeing that the cost is about 1*s.* 5*d.* (35 cents).

SCOTTISH MALAY RUBBER CO., LIMITED. (FEDERATED MALAY STATES.)

The amount of the rubber yield for the first six months of 1912 has been 68,469 pounds, as compared with 32,023 pounds for the corresponding period of 1911.

RIVERSIDE (SELANGOR) RUBBER CO., LIMITED. (FEDERATED MALAY STATES.)

During the six months ending June 30 last the yield of dry rubber was 63,954 pounds, as against 19,824 pounds for the same period last year.

BUKIT RAJAH RUBBER CO., LIMITED. (FEDERATED MALAY STATES.)

The yearly report for presentation to shareholders at the annual meeting of July 15, showed that the yield of rubber had increased from 6,813 pounds in 1904-5 to 567,214 pounds in 1911-12. Dividends rose during the same period from nothing to 150 per cent., the figure at which they have steadily remained during the last three yearly periods. The average yield of the total area now being tapped, of 1,977 acres in young and old rubber was 287 pounds per acre. The estimated yield for the current year is 600,000 pounds.

INDIAN LABOR IN MALAYA.

According to figures submitted at the recent annual meeting of the Planters' Association of Malaya the number of arrivals of Indian laborers for 1911 showed a material increase as compared with the previous years. The following returns show the net increase as represented by the difference between the number of arrivals and that of departures:

INDIAN LABORERS ENTERING AND LEAVING MALAYA.

	Arrivals.	Departures.	Net Increase.
1909	49,817	31,374	18,443
1910	83,723	39,080	44,643
1911	108,471	48,103	60,368

These figures are considered very satisfactory, and it is expected that those for 1912 will be equally good. The number of immigrants in January, 1912, was about 12 per cent. more than in January, 1911.

In connection with this subject, interest attaches to the figures of the estate population of the Federated Malay States and Kedah at the census of March, 1911, amounting to a total of 187,179, of which 152,929 were males and 34,250 females. Increased labor and increased production thus go hand in hand.

SANATORIA IN MALAYA.

With a view to affording European residents in Malaya the benefits of a holiday resort in a bracing atmosphere, a party, including the High Commissioner of the Malay States, accompanied by a group of prominent officials, recently visited Gunog Tahan, the loftiest peak in the Malay peninsula. At a height of 6,000 feet, where the party encamped for several days, samples of the water were obtained for the purpose of analysis, a step necessarily preceding any further measures. The spot is conveniently reached by the new railway passing near the foot of the mountain.

FUSION OF SINGAPORE RUBBER COMPANIES.

According to Singapore advices an agreement has been made for the formation there of a new company, under the style of "The Tapah Rubber Estates, Limited"; to acquire the properties of the New Singapore Rubber Co., Limited, and the St. Helena Rubber Co., Limited. The former of these two companies has 833 acres in Pará rubber and 1,188 acres uncultivated, while the latter has 403 acres planted in rubber. The nominal capital of the new company will equal about $300,000 gold.

THE MALAYAN EXPORT TAX ON RUBBER.

THE recent London agitation in opposition to the Malayan export tax of 2½ per cent on rubber, has been followed with interest, both in England and in the Federated Malay States.

Mr. Arthur Lampard, at the annual meeting of the London Asiatic Rubber and Produce Co., remarked: "I and a good many others associated with me have a strong belief in Free Trade, and the thing that really we dislike very much is the export tax. There is no export tax at all enforced in Ceylon or Southern India, nor, of course, is there in Sumatra or Java, and while we are told that this is necessary for the conduct of the business of the Federated Malay States, we fail to see how it is possible that that should be the case when they have a surplus of something like five millions sterling. The money is being raised out of Perak, Selangor and Negri Sembilan. It is not being spent there. It is being raised largely out of the rubber industry. . . . We believe that any unnecessary cost which is put on to the rubber industry in the Federated Malay States which makes working there less favorable than it is, say, in Ceylon and Southern India, should be brought before the notice of the public. It is our duty, as representing your interests, to make these facts public, because that is the only possible way in which we can get them rectified."

In replying to these criticisms and other similar utterances, Sir Ernest Birch, in a letter to the "Financial News," said: "I will take the *ad valorem* duty on rubber first. I do not know at exactly what sum it works out, but, with rubber at 5 shillings per pound, I take it that it is in the neighborhood of 1½*d.* per pound. . . . Can anybody who is able to look at both sides of a question say that it is overtaxing an industry which pays over 100 per cent. to take 2½ per cent. for the purposes of general administration?" . . .

Dealing with the general question of the finances of Federated Malay States, Sir Ernest adds: "Has not the government of the Malay States established a reputation for strength of purpose with most successful results? . . . Is the administration to shape itself to suit the rubber industry only, or is it to look forward to the fuller development of the States, to important railway expansion, and to the building up of a huge and varied trade?"

While Brazilian planters have to pay an export duty of 22 per cent., there seems in comparison but little ground for complaint on the part of the planters of the Federated Malay States. If even contributing to the surplus of $25,000,000, it is to be assumed that rubber planters will profit in the future by the railway extension and other improvements to which it will be devoted.

MALAYAN ESTIMATES BEING MADE GOOD.

By the most recent statistics the estimates of increased Malayan rubber production are being made good. In round numbers exports of the first six months of 1910, 1911 and 1912 were, respectively, 5¼, 8½ and 15½ millions of pounds, the estimate of 36 million for 1912 being thus in a fair way of being realized.

According to the information cabled by the Federated Malay States government to the Malay States Information Agency, the export of plantation rubber from the Federated Malay States for the month of June amounted to 2,305,915 pounds, which makes the total for the six months of the present year 15,382,265 pounds as against 8,349,397 pounds for the corresponding period of last year.

Appended are the comparative statistics for the corresponding periods in 1910 and 1911:

	1910.	1911.	1912.
January . . . . . *Pounds*	768,743	1,329,170	2,730,576
February	728,458	1,490,849	2,715,767
March	899,383	1,916,219	3,089,583
April	1,123,097	1,235,917	2,285,390
May	877,435	1,147,488	2,255,034
June	879,675	1,229,754	2,305,915
Totals	5,276,791	8,349,397	15,382,265

MALAYAS PROMISE AND PERFORMANCE.

Commenting upon the fact that various leading rubber companies in the Federated Malay States (whose financial year ends in March), have not only materially exceeded their output of 1910-11 in that of 1911-12 but have likewise exceeded the estimates of increased production, the "Investors Chronicle" of London writes: "This is a magnificent record. Nature does the work expected of her, with almost mathematical precision. And it must be said in justice that the planters and managers equally do theirs. . . . So far as estimate and results go, the above record shows there is no agricultural product which can compare with the *Hevea* in the almost mathematical accuracy with which its outputs can be gauged by competent authorities, and its remarkable ability, so far as the F. M. S. is concerned, to rise superior to climatic conditions."

MALAYAN COSTS AND YIELDS.

IN connection with the statement which has been made that synthetic rubber could be produced at 60 cents per pound (and possibly at 24 cents or less), it is of interest to note from the subjoined table that the average cost in 1911 of the five largest Malayan companies, which together furnished more than one-sixth of the Malayan output, represented 38.76 cents and the average selling price about $1.22 per pound. Plantation rubber has thus a large reserve of competing power.

Another point to be considered in connection with the present phase of the synthetic question is the progressive increase in the estimated Malayan output (as shown by subjoined table) from 23,400,000 pounds for 1911 to 130,000,000 for 1916. Comparing the estimates of the Dutch Consul General at Singapore with those of the United States vice-consul at the same point, the figures, though more or less differing for the years 1912 to 1915, are practically the same for 1916:

		Dutch Consular Estimate. Pounds.	United States Consular Estimate. Pounds.
Actual	1911 ..	23,400,000	23,400,000
Estimated	1912 ..	45,587,000	36,000,000
"	1913 ..	64,152,000	48,000,000
"	1914 ..	86,712,000	66,000,000
"	1915 ..	111,537,000	90,000,000
"	1916 ..	133,083,000	130,000,000

YIELD, COST AND SELLING PRICES, FOR FIVE LEADING MALAYAN PLANTATIONS.

Established.		Yield, 1911. (Pounds.)	Cost (average). s. d.	Equaling, cents.	Selling price (average). s. d.	Equaling, $ c.	Dividend, 1911.
1895	Linggi Plantations	1,097,719	1 3.85	32.13	4 9.56	1.16.72	194 per cent.
1909	Straits Rubber Company	985,279	1 7.83	40.20	5 3	1.27.71	45 per cent.
1905	Anglo Malay Rubber Company	780,972	1 5.50	35.47	5 2.54	1.26.77	70 per cent.
1906	Highlands & Lowlands Rubber Company	633,000	1 4	32.43	4 9.20	1.15.94	37½ per cent.
1899	Selangor Rubber Company	501,638	2 2.42	53.56	5 0.48	1.22.60	275 per cent.
	Total, pounds	3,998,608					
	Average for five companies		1s. 7.12d.	38.76c.	5s. 0.16d.	$1.21.95	124 per cent.

THE REAL RUBBER OUTLOOK.

According to a rubber manager, who passed through Hong Kong recently, and whose views are quoted by the "South China Morning Post," Malay homesteads are now surrounded with rubber trees instead of cocoanuts as formerly. The latter are being rapidly exterminated on most of the estates and many other profit-yielding crops, such as sugar cane, are vanishing.

He adds: "It is impossible in the circumstances that the price of rubber can be maintained. It is true, certainly, that the demand for rubber is increasing, but it is also true that the production is multiplying at an enormous rate, and the cost of labor rapidly increasing. The next two years, during which most of the estates which came into being during the boom would come into full bearing, would be vital ones for rubber shareholders. It would eventually resolve itself into a case of the survival of the fittest, and consequently the older companies with substantial reserves laid by during the boom period, would probably buy out the weaklings at prices which shareholders would be compelled to accept."

THE WORLD'S RUBBER ACREAGE.

FOR sime little time past the world's area in plantation rubber has been known to be approaching the million-acre mark, that figure having been named by THE INDIA RUBBER WORLD of May last (page 393) as having been then probably exceeded. The estimate of Vice-Consul General Figart of Singapore had placed the acreage for 1910 at about 800,000 acres. The increase of some 200,000 acres, or 25 per cent. of the planted area, according to statistics to the end of 1911, shows that the large yields have encouraged fresh planting. A comparison of the two estimates confirms the fact that planting is still on the increase upon the Malayan Peninsula, with the prospect of all the more rubber in five years from now:

ESTIMATES OF WORLD'S ACREAGE PLANTED IN RUBBER.

	1910.	1911.
Malayan Peninsula ..... *acres*	362,853	500,000
Ceylon	241,885	200,000
Java and Sumatra	150,000	200,000
India Burma	43,525	30,000
Borneo	.....	25,000
Cochin China	11,000	15,000
Other countries (say)	.....	30,000
Totals	809,263	1,000,000

The later estimate having been compiled by the Association des Planteurs de Caoutchouc may be considered as reliable and as fully confirming the previous anticipations on the subject of the "million acres."

MALAYAN PRODUCTION IN 1916.

ESTIMATES of acreage planted in rubber are of interest, but their practical significance depends upon the number and age of the trees they contain, as well as upon their prospective yield.

In order to define the probable result, it is necessary to establish a normal basis of yield per acre, varying with the age of the trees. Such an estimate has been made by Dutch Consul-General Spakler, of Singapore, as follows:

	Yield per acre in pounds.
Trees 4 years old	60
" 5 " "	125
" 6 " "	200
" 7 " "	250
" 8 " "	300
" 9 " "	325
" 10 " "	350

Applying these rates to the 500,000 acres planted up to 1911, according to the acreage at various ages of trees, the following result is shown:

POSITION AT END OF 1911.

		Acres.	Age of trees years.	Yield per acre.	Estimated yield 1911. Pounds.
Planted	1876-1898....	50	35-14	1,000	50,000
"	1898	500	13	350	175,000
"	1899	1,000	12	350	350,000
"	1900	1,450	11	350	507,000
"	1901	4,000	10	350	1,400,000
"	1902	8,000	9	325	2,600,000
"	1903	10,000	8	300	3,000,000
"	1904	14,000	7	250	3,500,000
"	1905	35,000	6	200	7,000,000
"	1906	48,000	5	125	6,000,000
"	1907	93,000	4	60	5,580,000
Total tapped	1911	215,000	Estimate 1911		30,162,000
Planted	1908	48,000			
"	1909	61,000			
"	1910	113,000			
"	1911	63,000			
Total untapped	1911	285,000 acres.			
Total acreage	1911	500,000 acres.			

The fact that the actual exports from the Malayan Peninsula only amounted in 1911 to 23,400,000 pounds, is attributed to the drought of the spring months, and to the fact that to a great extent the plantations of 1906 and 1907 were neglected in 1908 and 1909, their future yield being thus affected.

Estimates for the years 1912 to 1916 are:

	Planted (Acres).	Tapped (Acres).	Estimated yield (Pounds).
1911.....	500,000	215,000	30,162,000
1912.....	500,000	263,000	45,587,000
1913.....	500,000	324,000	64,192,000
1914.....	500,000	437,000	86,712,000
1915.....	500,000	500,000	111,537,000
1916.....	500,000	500,000	133,083,000

These figures, it will be understood, take no account of the yield from plantings of 1912 and later years. That from the acreage actually planted, the market will in 1916 have to absorb 133 million pounds, as compared with 23 million pounds in 1911, is a fact to be kept in view when estimating future prospects.

The estimate of Mr. Figart, United States vice-consul general at Singapore, of the 1916 yield, quoted by the INDIA RUBBER WORLD in January, 1912 (page 162), was 65,000 tons (130,000,000 pounds), which practically agrees with the above independent estimate of 133,083,000 by the Dutch consul general at the same port.

RETIREMENT OF A PIONEER MALAYAN PLANTER.

After 28 years in the East, Mr. J. B. Douglas lately returned to England. Mr. Douglas has been for five years with the Anglo-Malay Rubber Co., and altogether has had a pretty wide experience of rubber in his province, Negri Sembilan. When asked before leaving as to his general opinion of the best land for rubber-growing in Malaya, he stated that he thinks the hilly country will always prove the more satisfactory where it has been planted up, the low-lying land being subject to floods and swamps and other experiences so injurious to rubber.

NOTES FROM BRITISH GUIANA.

By Our Regular Correspondent.

WEATHER conditions here are not such as to cause complete satisfaction. The promise given at the breaking of the drought has not altogether been fulfilled, and we are not having typical rainy season weather. The colony is not unnaturally dry, as it was during the period of the drought, but the rain is neither so frequent nor so abundant as to free leaders in the balata industry entirely from anxiety. Heavy showers fall at unexpected intervals, but the aggregate rainfall is not sufficient. The returns, when published, will make interesting reading. It is stated in the "Daily Chronicle's" market report that in some districts 14 inches have fallen, in others 8 inches, while on the East Coast of Demerara the fall has been less than 4 inches, which is not sufficient. Unfortunately the nature of the balata industry has not led to any steps being taken to obtain exact rainfall returns from the interior, so which of these three averages is likely to apply in the balata bush is not known. The market report above quoted, however, states that the prospects for the industry are satisfactory and that shipments will be good later on. At present they are very much "down" in the export of balata.

THE LABOR PROBLEM AND THE BALATA COMMITTEE.

There is one feature of the existing situation, however, which is not satisfactory, and that is the eternal labor problem. I have already indicated the difficulties that have arisen in consequence of laborers demanding newer contracts than those signed in January, when the drought was not expected to be of so long a duration. A more insidious difficulty has now arisen. Owing to the generosity of some companies who took a broad-minded and, it was to be presumed, far-seeing policy, in "advancing" their men during the bad times, some men have accumulated a considerable indebtedness. It was thought that the lateness of the season would have prompted a ready response to the call for a return to work. But the absconding evil has again arisen; not to a very serious extent it is true, but it is not yet dead. One gentleman, who has had a long experience of the forest industries, and of the laboring class of British Guiana, has expressed the view to me that the men, fearing that owing to the shortness of the season, they will barely make more than enough to clear off their indebtedness, have no intention of doing any serious work. This may be an exaggerated view, but it receives a certain amount of confirmation from a gentleman who states that, according to the reports he has received, the men whom he despatched a little while ago are doing little work. Perhaps the Balata Committee will offer some adequate solution of this difficulty. The report was signed a few days ago, and is, I am told, a voluminous document. It should be published without delay. It is hoped that it will not be mere verbiage, but that it will embody some practical, common-sense remedies for what is admittedly a serious evil.

THE NEW YORK EXHIBITION: A COLONY EXHIBIT IMPROBABLE.

The question of the colony's representation at the Rubber Exhibition to be held in New York in September continues to engage attention. At a recent meeting of the Permanent Exhibitions Committee, letters from the Royal Agricultural and Commercial Society and the Chamber of Commerce were read. The Deputy Chairman, Professor J. B. Harrison (Director of Science and Agriculture) informed the committee that he consulted with Mr. H. C. Pearson, of THE INDIA RUBBER WORLD, who is vice-president of the Exhibition, and keenly interested in the rubber industry in the Guianas, and he advised that unless a really good show of rubber and balata could be made in New York, it would be to the interest of the colony not to be represented. The secretary reported that steps had been taken to ascertain whether arrangements could be made for the distribution of British Guiana literature at this exhibition. Up to the present no reply had been received from the exhibition authorities. The director of the Imperial Institute had also been approached as to the strengthening in number of the British Guiana samples of rubber and balata shown at their stand, and the institute is also being asked to undertake the distribution of literature, if that is possible. The committee approved of this action and confirmed the opinion expressed at the last meeting as to the sending to this exhibition of exhibits of rubber and balata.

The decision has excited some feeling. In an interview the president of the Royal Agricultural and Commercial Society, said: "My own personal opinion is that the colony should make an effort to secure an effective, if even a small, representation. While we cannot make any claims to possess an established rubber industry, we can at least show we have suitable climate and conditions, cheap land, sufficient labor and a public and administration desirous of welcoming and advancing the new industry. I may say that Messrs. Bonsall have offered the society to contribute $150 to the cost of a representation at New York."

The president of the Chamber of Commerce, Mr. G. R. Garnett, said: "The Chamber of Commerce feels very strongly on this subject. They think that exhibits of both rubber and balata should be sent, and we have reason to believe that there is ample time in which to secure satisfactory samples."

Mr. G. C. Benson, attorney in this colony of Mr. Ed. Maurer, during the absence of Mr. Edward Edwards in England and the United States, said: "It is certainly possible to obtain a sufficient quantity of the very best balata by August. A man could bleed 100 trees in a month.

BALATA MAN'S RESIGNATION FROM THE LEGISLATURE.

Mr. C. P. Gaskin, who is largely interested in the Balata industry, and who was a member of the Court of Policy, has applied for and obtained a Receiving Order in Bankruptcy. He thus *ipso facto* resigns his seat. This is something of a loss to balata interests here. It was he who successfully led the campaign at the recent annual session of the Legislature, for the abolition of the export duty on balata. Mr. Downer, who was elected to the seat thus vacated, was also at one time connected with the balata industry, and knows its needs thoroughly, is a business man of many years' experience and is pledged to a policy of Hinterland development. So the change is not disastrous.

RUBBER SEED: DANGERS OF INDISCRIMINATE PLANTING.

The report of the delegates of the Board of Agriculture, who attended the recent West Indian Agricultural Conference at Trinidad, has now been issued. They say of rubber: "Early on Monday morning the delegates were present at a demonstration of methods of rubber tapping and curing at St. Clair. The British Guiana representatives saw little that was new to them with exception of the somewhat heroic method adopted for bleeding *Castilloa*. . . . Dr. Cramer was in full agreement with the British Guiana delegates as to the heterogeneous nature of the trees and the danger of indiscriminately planting seeds produced by them. It was agreed that the wisest procedure would be to fell every tree which presented other than the characteristics of typical *Hevea Brasiliensis*.

HEVEA AND *SAPIUM*: THE DAVID YOUNG ESTATES.

Much has been heard lately of the failure of the *Sapium* rubber trees. At the Agricultural Conference at Trinidad, Professor Harrison said it was not yet possible to speak of the estate's commercial possibilities, but hoped that it would be possible to do it in the course of next year. It will be recollected that the David Young Rubber Estates, Limited, are largely planted in *Sapium*, and that in consequence of recent rumors this company has been somewhat under a cloud. Things, however, are not so bad as they look. Mr. Thomas Walker, who is in charge of the

estates, came to town recently and, in the course of an interview, said: "The *Hevea* trees planted some years ago are doing very well indeed. Many of them have attained a height of 25 to 30 feet and a girth of 17 to 20 inches at a distance of 3 feet from the ground. All the *Heveas* are seeding; a satisfactory sign. Altogether such progress is being made, that in a year or two tapping operations can be commenced."

FURTHER BRITISH GUIANA NOTES.

BALATA PROSPECTS.

ACCORDING to the "Daily Argosy," the rains, while not yet satisfactory in quantity, have been sufficient to permit the moving of stocks of last season's balata which had accumulated.

A shipment of balata for the Consolidated Rubber and Balata Estates, Limited, was expected in the course of a few weeks. It amounts to about 14,000 pounds and is from grants on the Takatu. The balata was not collected this year. Messrs. Bugle & Co. also had a big amount of balata at one of their grants held over from last season, and the arrival of this was expected in a short time.

The first consignments of balata collected this season, at the remoter grants, at any rate, are not expected till about the end of August or beginning of September. It will be well on in July before the men who have gone up will get settled down on the grants for collecting work. Then, after the trees have been bled, some time will elapse before the milk has been converted into marketable balata, and after that there will be the time taken

SUGAR CANE MILL, GOLDEN GROVE, DEMERARA, BRITISH GUIANA.

in getting the balata transported to Georgetown. It should not be very long, however, before consignments are obtained from grants not a great distance from Georgetown.

EXPERIMENTAL TAPPING AT ISSORORO.

In accordance with a recent decision by the Board of Agriculture, the experimental tapping of rubber trees at the Government Experimental Station at Issororo in the Northwest district has been commenced. Recently, Mr. F. A. Stockdale, Assistant Director of Science and Agriculture, tapped, it is understood, some eighty of the trees, the height and girth of which were reported on very favorably. The results of the tapping have not been made public.

MEADOW BANK AVENUE, DEMERARA, B. G.

EXHIBITS IN COMMERCIAL QUANTITIES.

With reference to the decision of the British Guiana Permanent Exhibitions Committee, not to take part in the approaching New York Rubber Exposition, the principle enunciated is officially stated to be general in its application.

The resolution passed at a recent meeting of the committee was to the effect that only exhibits of first-rate quality and in large commercial quantities should in future be sent to exhibitions, it being considered that more good to the colony would accrue from these than from the display of small sample collections.

BRITISH GUIANA BALATA COMPANY, LTD.

Arrangements are said to have been made on behalf of Mr. Ed. Maurer, of New York, whose attorney in the colony is Mr. Edward Edwards, for working the balata grants of the British Guiana Balata Co., Limited.

This company was formed in 1910 to take over licenses for collecting rubber and balata over an area of forest land comprising 448,000 acres, situated near the Essequibo river.

It is stated that the balata trees in the explored part average 8 to the acre; the whole property containing over three and a half million trees, varying in height from 80 to 100 feet.

THE MAUS TAPPING SYSTEM.

According to the "Singapore Free Press," Mr. Theodor Maus, who has had a good deal of rubber experience in East Africa, has arrived in Singapore, with the purpose of trying to introduce a system of tapping *Hevea Brasiliensis* to which he has given much experimental attention. It is claimed for his system that it stimulates the natural flow of latex to a hitherto unprecedented degree. Mr. Maus affirms that in the case of young trees of tappable age this plan will yield more than twice the amount of first class dry rubber than is at present to be looked for. There is even a smaller degree of bark removed than is the case with the half herring-bone system. Manual labor is also reduced, and generally much better results are obtained with much less strain on the trees. Mr. Maus believes that the adoption of the method he has devised would secure at once economy and efficiency, with a larger output.

RUBBER AND BALATA IN DUTCH GUIANA.

By a Resident Correspondent.

THE first Balata of this year has arrived in Paramaribo from the nearest Balata concessions. From some other more remote parts of this colony less energetic gangs of laborers returned without reaching their grants, pretending the "falls" were too dangerous to pass over.

It may be taken as a rule that the heavier these people are in debt to their employer, the more pretentions they have and the less energy they show in fulfilling their contracts. Rubber is growing fine with this weather. The accompanying photo shows two-year-old rubber trees at Geyersvlijt Estate, a private company of S. Haas Brothers.

GOVERNMENT BALATA REPORT.

A very elaborate and important report has just been issued by order of the Government on "The Balata Problem in Surinam." In the preface the authors say: "Neither here, nor in Demerara nor Venezuela, have the governments thought it their duty to make a thorough study of the Balata industry, and to try to point out if, and in which direction, the situation ought to be changed." The situation of the whole industry, its history, past and present, laws, labor conditions, forests, bark, tapping, etc., are fully and ably described and comparisons made with Demerara and Venezuela.

TWO-YEAR-OLD RUBBER TREES AT GEYERSVLIJT, DUTCH GUIANA.

Besides interesting statistical tables which will be referred to on a future occasion, the work contains studies on the tappable bark of the Balata tree, how the bark grows, and on the cells containing the Balata milk, which are quite a revelation and very interesting. The "cells" containing the balata are chiefly in the outer bark, there is no wound response as with *Hevea*. If not tapped it dries up and with a miscroscope you can easily find the dry balata in the corky dry outer bark, which is last expelled from the tree. And never, though tapped with the greatest care, will all the balata contained in the long cells run out.

Once tapped it is only possible to get balata again on the same place, when the old bark is grown out and replaced by totally new bark, *i. e.*, after 8 to 10 years.

Mr. Henry Benjamin, the head of our largest Balata Company, "Surinam," left by last mail for Europe, retiring from business. Meanwhile we have read that Mr. Struycker has resigned his Government situation and accepted the head management of the Balata Company, "Surinam."

The government statistics indicate a slight falling off in the values of tires exported the past spring as compared with a year ago. The figures show that during May, 1912, $272,317 worth of tires were sent out of the United States as compared with $310,346 for May, 1911.

Of course the lower price of tires last May as compared with the year before must be borne in mind in this comparison.

ANOTHER NEW USE FOR RUBBER.

MUCH interest has been manifested in Brazil in the proposed use of rubber as a foundation of fur garments. Señhor Armando Diniz, in the "Commercio do Amazonas." of Manáos, writes as follows:

"Besides the numerous present industrial applications of rubber, the Americans (North—well understood) have just discovered another, which seems to us of the greatest practical utility, and consequently destined to considerably increase the use of rubber.

"It consists in its substitution for the skins of animals, which serve for the warmth and adornment of the fair sex during the winter in temperate climates.

"Furs—as everyone knows—however well dressed, are continually a prey to numerous insects, to such an extent that they can only be preserved during the hot season by being saturated with camphor and its derivatives. But none of these precautions are sufficient to afford them immunity.

"The new process consists in transferring the animal fur upon an artificial skin of rubber, scientifically prepared with a view to preserving it.

"It is said that by this process the fur will retain its original luster for many years, and can be without apprehension exposed to the weather, being, moreover, proof against all vermin and insects. There is no need of special care, nor of violent antiseptic agents for insuring preservation.

"Above all other advantages the new process affords to animal fur, is that being united with a layer of rubber, it can only be removed by violence, and never through the decomposition of the rubber."

RUBBER BALLS IN EUROPEAN GAMBLING.

ONE of the most popular and widely diffused European gambling games is the "Jeu de Boule"; its favor being partly due to the lowest stake being one franc (or 20 cents). Nevertheless, a continuance of bad luck may relieve the player of a comfortable sum (or an uncomfortable sum) within an hour or two. The game is played by means of a tray resembling that used for roulette, into which a colored rubber ball drops. After circulating, it falls into one of the nine holes in the bottom of the tray, showing its capriciousness by first locating in one hole and then changing to another. The balls are gray, two inches in diameter, and painted like tennis balls in red, blue and green. Some players are so superstitious that they will only play when balls of a certain color are rotating. Gambling in European resorts thus cannot do without rubber.

THE accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

NEW TRADE PUBLICATIONS.

THE Bristol Co., Waterbury, Connecticut, has recently issued a handsome 64-page catalog 8 inches × 10½ inches, carefully printed on heavy-coated paper. The catalog contains a great many half-tone illustrations of the recording pressure gauges and vacuum gauges made by the company, some of these cuts filling almost a page and showing in minute detail the characteristics of these gauges.

This catalog, which, by the way, is No. 1000, lists all of the Bristol company's recording and vacuum gauges except the round form models 50, 52 and 56, which are shown in bulletins issued earlier by the company.

The illustrations not only show gauges as generally used, but show them in portable form and in waterproof and moisture-proof cast-iron cases. Some of the illustrations show the construction of the gauges, making very clear the simplicity of their construction. An interesting illustration that occupies two pages is a full-size fac-simile section of a 12-inch chart, with record of draft in sack for B & W boiler in the power plant of an electric light and power company, as recorded by a Bristol recording vacuum gauge. Twelve pages of the catalogue are devoted to a list of names of some out of the 25,000 users of the Bristol gauges.

The B. F. Goodrich Co., Akron, Ohio, has issued a large sheet printed on a sort of parchment paper 22 inches by 34 inches in size, which folds into 8½-inch x 11-inch folder. It devotes half of its space to reproducing a number of letters received from members of the trade, complimenting the Goodrich Co. on its recent price reduction. The rest of the folder is given up to showing, in the form of large half-tone cuts, some of the more recent styles of automobile tires manufactured by this company, among them the Goodrich Master Tread tire, the Goodrich-Bailey Tread and the Goodrich Metal Studded tire.

The Diamond Rubber Co., Akron, Ohio, has recently mailed the trade a folder about 6 inches x 10 inches, which opens out into a large sheet and shows cuts, standing nearly a foot high, of three of its famous tires—the Safety Tread, with rubber "Squeegee" bars; the Grip Tread, with steel rivets, and its smooth tread tire. The folder carries this motto: "We could build them cheaper—but we won't. We would build them better—but we can't."

The United States Tire Co. has issued No. 9 of its magazinette called "U. S. for Us." This is a little publication intended for home consumption by the employes of the United States Tire Co. It is full of encouragement for the members of its selling force, and gives sage advice as to the methods by which their success may be increased.

The Portage Rubber Co., Akron, Ohio, is distributing a tasteful little pocket catalog called "Portage Tires." It illustrates a number of the best-known tires made by this company and describes them. The little book contains an "Inflation Table," together with a table showing the carrying capacity of the company's tires, and gives the price list now in effect.

The Combination Rubber Manufacturing Co., Bloomfield, New Jersey, issues a little booklet 3½ inches by 6 inches, of 32 pages, entitled "A Condensed General Catalog." The name indicates its character. It describes, without illustration, the various products of the company, including rubber belting, garden hose, suction hose, air-drill hose, brewers' hose, acid hose, rubber valves, couplings, tubing, mats and sundry other rubber goods.

The Frontier Tire and Rubber Co., Buffalo, New York, issued about the 4th of July a little card appropriate to the season of special patriotism, as on its front side it shows the American Flag waving in the breeze, while on the other side it gives some tables which the owner of the automobile will find convenient for reference. These tables show the correct pressure for tires, interchangeable tire sizes and the proper tire inflation.

The Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pennsylvania, recently sent out a 32-page pamphlet designed as "Circular No. 1094," devoted to the Westinghouse Turbo-Alternators. The pamphlet is generously illustrated and shows the turbine generators made by this company as installed in a great many of the leading power plants in the United States. The interesting statement is made in the pamphlet that during the past 17 years there has been a revolution in the design of electric power plants. It continues: "The superior economy of the turbo-generator unit, not only in steam consumption, but in first cost, attendance and in maintenance as well, and the reduction it has effected in general plant investment, in real estate, buildings and foundations, has practically eliminated the large slow-moving reciprocating engine-driven sets from the serious consideration of the modern power-plant engineer and designer."

The Manhattan Rubber Manufacturing Co., New York, has recently issued a little six-page folder descriptive of its "Condor" rubber belting, which the company states is equally good for transmitting power, elevating or conveying material. In addition to a description of this belting, the folder gives a comprehensive price list of this belting in widths varying from one to 60 inches, and in thicknesses from two to eight-ply.

FACTORY VENTILATION AND HOW TO GET IT.

A FEW years ago, manufacturers had an idea that there was just so much work in a man and that they could get it out of him regardless of what his surroundings were. But that venerable theory has been exploded, for the manufacturer realizes now that to get the maximum amount of work out of his employes, they must be surrounded by conditions that make it possible for them to do their best. Plenty of light, the proper temperature, and above all—good ventilation—are now prime considerations with all factory owners.

It sometimes happens, however, that while an employer's intentions are good, his methods are not such as to effect the desired results. For instance, in the matter of heat and ventilation—air should not be blown on hot machines and presses to cool them off. More heat is generated in that way; exactly on the principle of the cold air box of the furnace. Heat should be removed at the highest point possible; and where a fan is used there should not be an open window nearby nor any leakage where the currents can short-circuit. Gasoline fumes are best removed at the floor.

Many times in cold winter weather some factory superintendent will be found trying to remove steam in some exceedingly expensive way. The Autoforce System now used in many large rubber factories, has been devised to eliminate the expense and the danger of the power fan. The principle of the Autoforce System is the simple one of working with rather than against nature. The natural air currents are usually sufficient for purposes of ventilation and for carrying off excess heat.

The saw-tooth roof gives the steady northern light, but the heat in the peak is like the attic of a house. This is where an Autoforce Air Pump must be used; nothing else will accomplish the result. Heat should be utilized in winter, but should be made to remove itself in summer, when it creates friction, curtails efficiency of the help, and is dangerous.

THE HARDMAN COMPANY LOST BUT LITTLE.

The loss at the fire in the factory of the Hardman Tire and Rubber Co. at Belleville, New Jersey, which occurred in June and was mentioned in our July issue, was not as great, we are very glad to say, as was first reported. The fire broke out in one end of the hard-rubber department and the entire loss of stock and in damage to the building only amounted to some $15,000 which was fully covered by insurance.

THE OBITUARY RECORD.

ALFRED N. MAYO.

ALFRED N. MAYO, treasurer of the Fisk Rubber Co., Chicopee Falls, Massachusetts, died, June 26, at his home in Springfield, Massachusetts.

Mr. Mayo was born in Springfield and had made that his home practically during his whole life of 68 years. He was one of the prominent business men of that city. In addition to his position in the Fisk Rubber Co., he was identified for a number of years with the firm of A. N. Mayo & Co., and at the time of his death he was president and treasurer of the Merrimack Paper Co., of Lawrence; treasurer of the Knox Automobile Co., of Springfield; president of Dexter P. Lillie & Co., of Indian Orchard; and was connected with the Standard Brick Co., of Springfield.

ALFRED N. MAYO.

He served in the Civil War as a member of the 46 Massachusetts Regiment, and in 1885 and 1886 he was a member of the common council of his city. He was highly esteemed in the business circles of western Massachusetts, where, owing to his many business connections, he was widely known. He was married, in 1870, to Miss Julia Billings, of Springfield, who survives him, together with three daughters, Mrs. H. G. Fisk and Mrs. E. O. Sutton, of Springfield, and Mrs. W. P. Schnell, of Seneca Falls, New York.

The funeral was held on the afternoon of June 28, at his home, the officiating clergyman being the Rev. Dr. Neil McPherson, of the First Church, to which Mr. Mayo belonged.

ABRAHAM STRAUSS.

Abraham Strauss, the senior partner and founder of the firm of Feist Strauss, Frankfort-on-Main, Germany, died in June at the age of 76 years. Mr. Strauss founded this firm, one of the largest scrap rubber houses in Europe, in 1867, and had been actively identified with it up to the time of his death.

JOSEPH V. SELBY.

Intelligence has been received of the death on July 19, of Joseph V. Selby, the Pacific coast manager of the Boston Woven Hose and Rubber Co. Mr. Selby had been connected with this company for quite a number of years, and was located at San Francisco. While he was not widely known in the East, he had an extended acquaintance throughout the Pacific coast, and was one of the prominent rubber men of that section.

He was a native of Massachusetts, where he was born 61 years ago, but had lived on the Pacific coast for a good many years. He was prominent in social circles of San Francisco, as well as in business circles. He is survived by five children, three daughters and two sons.

THE EDITOR'S BOOK TABLE.

EL HULE, SU HISTORIA, NATURALEZA, CULTIVO; QUIMICA Y Tecnica: (Rubber—Its History, Composition, Cultivation, Chemistry and Technique.) By William F. Dern, Technical Director of the Mexico Latex Co., Mexico, 1912. [Cloth, 8 vo, 130 pp.]

WHILE much has been written on the general history of rubber, the salient points of the subject are summarized in the treatise by Mr. Dern, in such a manner as to effectively recall the facts to the mind of the busy rubber man. Attention is then called to the various plants yielding rubber, which by degrees have enriched the field of industrial botany, through the successful efforts of energetic pioneers to overcome natural difficulties. The superiority of *Hevea* in quality and abundance of product is urged, its cultivation being recommended in warm and humid locations, and that of *Manicoba* in more temperate situations.

Caucho is dealt with in detail from a botanical, as well as a cultural, point of view, and with reference to both Amazonas and Peru.

As to *Castilloa*, Mr. Dern comments upon the fact that the Republic of Mexico occupies the first place in the production of that variety. The development which has taken place in the States of Tabasco and Chiapas, is attributed to the liberality with which the United States has invested capital in rubber plantations.

In his capacity of technical director of the Mexican Latex Co., its operations are fully described by Mr. Dern, by whom it was established in 1910 at San Juan Banutista, State of Tabasco. He had invented a method of coagulating latex on a large scale, with a view of producing a mass as free as possible from resin and other hurtful substances.

The company buys the latex in the crude or liquid state, from a number of estates in the district named, which, by the addition of a special powder, invented by Mr. Dern, is preserved for several months in a liquid state, with only an unimportant change in its natural condition. It therefore is not affected by the concussions received in the course of transport by means of mules. On reaching the factory, the latex is immediately deposited in specially constructed machines. By the addition of boiling chemical liquid, and after 800 revolutions of the machine, the product is in fifteen minutes ready for pressing, and after the water has been extracted, can be shipped in blocks. Mr. Dern expresses the hope that this process will be adopted in other countries.

The later chapters deal with various points affecting rubber cultivation, but the real interest of the treatise centers in the description of the Dern process, which thereby renders the book of value to planters in general.

CONSUMERS' RECEIVERSHIP ENDED.

Presiding Justice Tanner of the Superior Court of Rhode Island entered a final decree, July 2, in the case of Terrence McCarty against the Consumers' Rubber Company of Bristol, allowing the report to the receiver, Robert S. Emerson, and granting his discharge.

Mr. Emerson's report shows a total of $117,365.98 received and $117,151.44 paid out during the period of his receivership. He had disposed of merchandise valued at $113,859.71, and had transferred to the newly organized Consumers' Rubber Company merchandise and personal property worth $49,864.61, cash amounting to $1,364.16 and bills receivable footing up $2,359.01.

New Rubber Goods in the Market.

LONG DRIVING GOLF BALLS.

THE three cuts shown herewith represent three different patterns of golf balls. The first one is known as the "Arch Colonel"; the second, the "Green Star Colonel," and the third, the "Crescent Colonel." The first two differ only in their marking, the "Arch Colonel" having an entirely new sunken mark-

ST. MUNGO GOLF BALLS.

ing, while the "Green Star Colonel" has an eight-pole pebble marking. The "Crescent Colonel" is a new ball just brought out and is marked like the "Arch Colonel," but is a floating ball. The manufacturers of these balls make very confident assertions about their long-driving qualities. [St. Mungo Manufacturing Co. of America, Newark, New Jersey.]

THE DIAGONAL BLOCK TIRE.

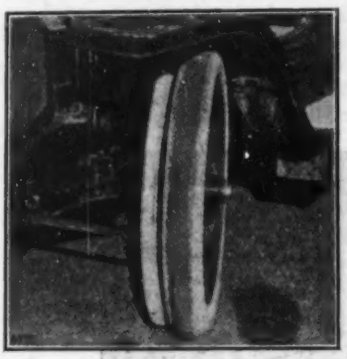
A new heavy duty truck tire has been invented by Albert L. Siegrist, Akron, Ohio.

The special feature of this tire is that every block is independently demountable without interfering with other blocks. This removal feature is accomplished by the use of two "U" shaped head bolts running downward through the felloe, and a bolt crosswise through the downward flange. With all bolts in place they become a solid mass, eliminating the strain from any one particular block.

The blocks are placed on the wheel diagonally, a feature that gives a smooth continuous roll and also prevents skidding and allows for rubber displacement. [The Diagonal Block Tire Co., of Urbana, Ohio.]

AUXILIARY SOLID TIRES.

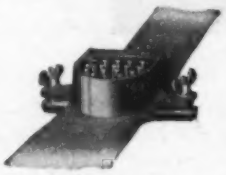
To take the place of the spare wheel usually carried for taxicabs and light vans, the Blackwell rim has been devised, which consists of a light pressed-steel rim, of which an integral part is a continuous skeleton form of flange. The rim holds a length of light solid tire, and the flange serves to fasten this direct to the felloe of the wheel, keeping it in permanent position on the inside of the wheel. The outer diameter of this inner rim comes within about 3 inches of the ground when the pneumatic tire is fully inflated. But when the pneumatic tire is deflated, this auxiliary solid tire meets the ground and does the work of the incapacitated pneumatic tire; avoiding the damage that would be done the pneumatic tire if continued in use in its deflated condition. [The Blackwell Rim Co., Stourbridge, Worcestershire, England.]



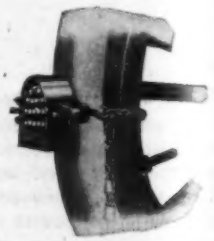
BLACKWELL RIM FOR AUXILIARY SOLID TIRES.

THE ADAMSON AUTO-VULCANIZER.

Many a motorist, when his tire has been punctured far from home, would have given a great deal for a little 3-pound vulcanizer that would have repaired the puncture in 15 minutes. As a matter of fact he need not have given very much, if he had been sufficiently provident to lay in beforehand the Adamson Auto-Vulcanizer, which costs but a few dollars, takes but little room and is said to repair the ordinary puncture in a quarter of an hour.



The two accompanying cuts show this repairer at work; one showing it on the outer shoe, the other clamped to the deflated inner tube. An interesting feature of this small vulcanizer is the fact that its temperature is, to a very considerable extent, under automatic control. When it is needed for a repair, an ounce of gasoline is poured into it and ignited. After it reaches the proper temperature for vulcanizing, a further increase of temperature is avoided by its peculiar construction, which is so planned that when the temperature of the gasoline reaches a certain degree, the volume of gas given off by it forces the zone of combustion up above the heat-conducting members of the vulcanizer. This permits the vulcanizer to cool somewhat, the flame lowers and the proper degree of heat is again attained.



It might be said in passing that this convenient little vulcanizer has been widely imitated. [The Adamson Mfg. Co., East Palestine, Ohio.]

Should be on every rubber man's desk—The Rubber Trade Directory of The World, 1912.

A BILGE PUMP FOR POWER BOATS.

It is estimated by people familiar with the subject that there are two hundred thousand power boats ranging from 18 to 40 feet in length, used in American waters at the present time.

The accompanying cut shows a device which makes it very easy and convenient to remove the bilge water from those boats. It is a double-acting bilge pump. The pump is 15 inches long under the spout and is supplied with 5 feet of rubber hose. Of course it can be used in any other small craft—row boats and sail boats—but its particular utility is in the small power boats. [A. B. Sands & Sons Co., 24 Vesey street, New York.]

ANOTHER SPRING TIRE.

It is not the fault of our American inventive geniuses that the pneumatic tire still continues in general use, for there are as many bright and active minds at work trying to invent something to take the place of the pneumatic tire, as there are figuring on the political chances of the new Third Party.

"COMFORT" TIRE.

Here is an illustration of a spring tire called the "Comfort," which does away with the pneumatic feature. As will be seen in the cut, around the felloe of the wheel there is a series of springs, some of them semi-elliptical and some of them extension coils. Outside of these springs there is a metal rim. Metal side plates are fastened rigidly to this outside rim, but play back and forth over the inner felloe, thus keeping the springs in place. The resiliency is produced by the springs in place of the air enclosed in the usual inner-tube of the pneumatic tire. The outer rim has a solid rubber tread.

A guarantee of 10,000 miles goes with this new tire. [Davies Manufacturing Co., Cleveland, Ohio.]

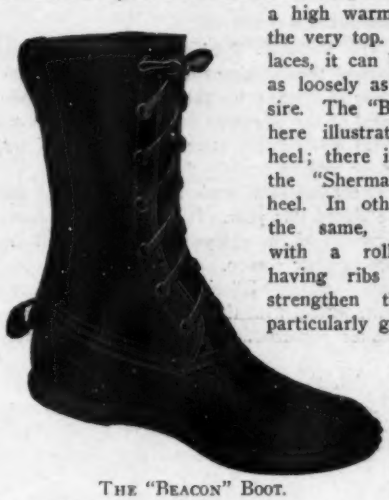
A QUICK VULCANIZING CEMENT.

If the claims made for it by its manufacturers, the American Tire and Rubber Co., Akron, Ohio, are correct, the "Five-Minute-Cure" cement produced by that company ought to become very popular, for the company claims that it can be used equally well in the making and repairing of casings, inner-tubes and general repair stock, and, moreover, that this cement will cure perfectly in five minutes. The company likewise maintains that this cement, owing to certain heat resisting properties it possesses, cannot be over-cured.

Consular report number 9162 states that a well-known firm in a foreign country invites price lists and catalogues for solid rubber tires for large 14-passenger automobiles. The American consul who forwarded the request states that correspondence should be in English, and price lists should be in English currency.

BOOTS OF RUBBER AND LEATHER.

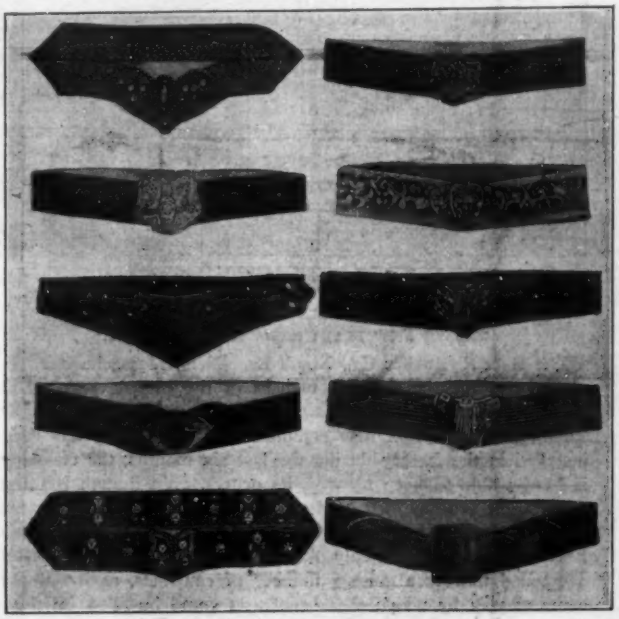
THE accompanying cut shows a boot made of a combination of rubber and leather. The foot is a rubber shoe and to this is attached a top of chrome-tanned waterproof leather. This makes a high warm boot, waterproof to the very top. Being equipped with laces, it can be fitted as snugly or as loosely as the wearer may desire. The "Beacon" boot, which is here illustrated, is made with a heel; there is another boot called the "Sherman," made without a heel. In other respects they are the same, both being finished with a rolled edge sole, and having ribs over the vamp to strengthen the shoe. They are particularly good for snow-shoeing and winter hunting. They are made from 10 to 14 inches in height and in all sizes for both men and women. [The Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut.]



THE "BEACON" BOOT.

THE FASHIONABLE ELASTIC BELT.

The use of elastic fabrics for ladies' belts is something that has of late become a very general fashion. At first thought it would seem as if such fabrics would not give a very wide range in variety of styles to suit individual tastes. Such, however, is far from being the case. Rubber thread is today woven into a great variety of fabrics of any color or shade, and ornamented with fancy stitches, beads, jet and even jewels. Then, too, the belts come in a great variety of widths and shapes and with buckles in gun metal, gold and silver. The accompanying illustrations show a few of the hundreds of styles of ladies' belts made from elastic fabrics.



TYPES OF ELASTIC BELTS.

News of the American Rubber Trade.

REPUBLIC RUBBER CO.

THE directors of The Republic Rubber Co., Youngstown, Ohio, have authorized the calling of a stockholders' meeting to be held early in August for the purpose of increasing the authorized capital of the company from four millions to ten millions. The capital will consist, after the increase, of six million common and four million preferred stock.

No definite announcement has been made as to amount of the additional capital to be issued this year. It is understood, however, that the steady growth of the company's business will require new capital before another season.

The directors have also authorized the construction of a large modern reclaiming plant, which, with the completion of the five-story building now under construction, will give considerably greater capacity.

It has been reported that there will be a common stock dividend of some size after the increase of capital has been provided, but when interviewed, President Thomas L. Robinson stated that there had been no definite action taken in regard to the stock dividend.

STEIN VS. STEIN.

The Stein Laplock Tire Co., a New York corporation, has brought suit against the Stein Rubber and Tire Co., also of New York, for $10,000 damages, charging unfair competition and the unauthorized use of the name "Stein" and also asking for a permanent injunction restraining the latter company from using the name "Stein" in connection with rubber tires.

The Stein Laplock Tire Co. has been doing business since February, 1910, located on upper Broadway, New York City. The Stein Rubber and Tire Co. was formed in October, 1911, and is located in the vicinity of the other concern.

THE HARTFORD CO. TO INCREASE ITS PLANT.

The Hartford Rubber Works Co., Hartford, Connecticut, has started on some extensive alterations, which probably will require seven or eight months for their completion. It is installing a new boiler plant that will more than double the boiler capacity of the works. A new building, 50 by 100 feet, will be erected for this purpose, to be made of reinforced concrete. In addition an automatic carrying system will be put in the factory that will obviate all coal-carrying by hand, as the coal will be conveyed directly to the boilers by the new mechanism. Certain "welfare" features are also being installed in the building in the way of shower baths and other conveniences for the employes.

A new smokestack, to be 200 feet high, will be another of the immediate improvements. It is expected that later a general building for manufacturing purposes will also be added. The accompanying cut shows the plant as it stands today, before starting on the additions mentioned above.

HARTFORD RUBBER WORKS CO.

THE "B & R" PLANT RUNS DAY AND NIGHT.

The B & R Rubber Co., North Brookfield, Massachusetts, reports sales for the first six months of the current year as 50 per cent. in advance of the same period a year ago. Notwithstanding the fact that new equipment costing $80,000 has been installed in the factory during the last six months, the company is hardly able to keep up with its orders, even though running on a night-and-day ticket. It opened a new department some little time ago for the manufacture of jar rings, and this business has grown so rapidly that the company has found itself compelled to refuse quite a number of contracts, as it did not see any way by which these contracts could be filled on time. Another recent department, which is also kept running on full time, is devoted to the manufacture of short-length hose for automobile radiators.

A new building has recently been completed to be used exclusively for compounding. This work was previously done in the main manufacturing building, but was crowded out by the growth of other departments. The stock department and shipping room have also been crowded out from the main building and are now being accommodated in the building expressly equipped for that work.

THE NEW UNITED STATES TIRE CO.

The new tire factory of the United States Rubber Co., alluded to in President Colt's last annual report, and further referred to from time to time by officers of that company, and of the United States Tire Co., is to be, according to an official statement, the largest tire factory in existence, with a capacity of 5,000 tires a day. The location of this new factory has not yet been announced, although there is a report that it will probably be in the vicinity of Chicago.

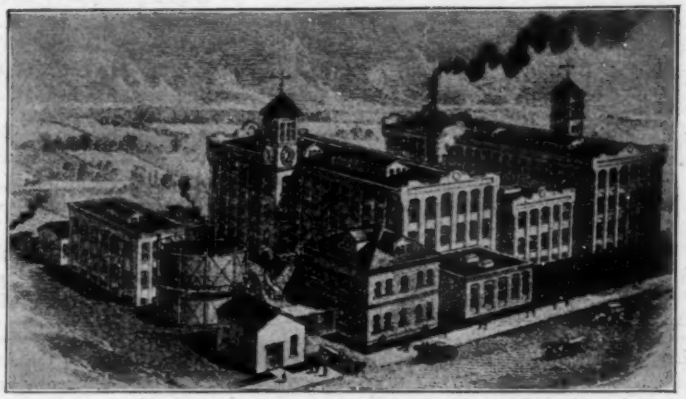
Should be on every rubber man's desk—The Rubber Trade Directory of The World, 1912.

STILL ANOTHER NEW PLANT FOR THE WALPOLE RUBBER CO.

About a year ago the Walpole Rubber Co., controlling the Massachusetts Chemical and certain other companies, made extensive additions to its plant at Walpole, Massachusetts. Although these were expected to meet the needs of the company for some time to come, only a few months had passed before the need of larger space became evident.

Not only has there been a very rapid increase in the production of insulating tapes and compounds, mechanical and other rubber goods of particular interest to the electrical industry and the electric railway field, but also in the manufacture of druggists' supplies, including the "Walpole" seamless hot-water bottles and syringes, of rubber heels for man and horse, and of a great variety of rubber clothing, while coincidently there has been developed a new automobile tire known as the "Walpole No-Stone-Bruise Tire," which has so quickly jumped into public favor as to still further overburden the plant.

Action looking to an immediate increase in manufacturing space became so imperative that it appeared undesirable to wait for the construction of additional buildings. Fortunately it has been possible to secure only five miles away, in Foxboro, Massachusetts, a complete plant designed with unusual care for the manufacture of a product since discontinued. This plant embraces something over three acres of floor space. As soon as the installation of the machinery is completed it will be possible to turn out at least a thousand tires per day. Additional space will then be released in the Walpole plant for the manufacture of an increasing variety of products in the lines still retained at that point.



NEW PLANT OF WALPOLE RUBBER CO.

NEW INCORPORATIONS.

Canadian Overman Co., Inc., July 4, 1912; under the laws of New York; authorized capital, $50,000. Incorporators: W. Albert Pease, Jr., 340 Madison avenue; Albert Z. Gray and Lusius Wilmerding, both of 5 Nassau street, all of New York. Location of principal office, New York. To deal in tires, etc.

Princes Rain Coat Co., June 28, 1912; under the laws of New York; authorized capital, $1,500. Incorporators: Harry Stern, 1006 Intervale avenue, Bronx; Henry J. Block, 2412 Seventh avenue, and Elias Kantor, 1172 Jackson avenue, Bronx, all of New York. Location of principal office, New York. To manufacture rubberized clothing, etc.

Rolo Manufacturing Co., June 10, 1912; under the laws of Delaware; authorized capital, $100,000. Incorporators: W. F. P. and W. I. N. Lofland and John S. Collins, Jr., all of Dover, Delaware. To manufacture and deal in the sale of rubber and rubber substitutes.

Russian Tyre Sales Co., July 2, 1912; under the laws of New York; authorized capital, $30,000. Incorporators: Otto Braunwarth, 601 West 162d street, and H. Ray Paige and Maud Steinway Paige, both of 304 West 107th street, all of New York. Location of principal office, New York. To deal in rubber, tires, etc.

Tanney Rubber Co., July 1, 1912; under the laws of New York; authorized capital, $10,000. Incorporators: Harry, Jacob and Philip F. Tannenbaum, all of 498 East 171st street, New York. Location of principal office, New York.

THE HOOD RUBBER CO. MOVES FOUR DEPARTMENTS.

On August 1, 1912, the Hood Rubber Co., Boston, Massachusetts, moved four of its departments, namely: Footwear Sales Department, Purchasing Department, Bookkeeping Department and Correspondence Department from its Boston office to the Factory Administration Building, Watertown, Massachusetts.

HOOD COMPANY TAKES OVER SHAWMUT TIRE CO.

Under date of July 21, 1912, the Shawmut Tire Co., 103 Bedford street, Boston, Massachusetts, sent out the following announcement:

"Our tire and tire accessory business has now reached such a volume that we find it expedient to reorganize our methods of handling the same. In order to further enlarge and economize the facilities in the tire business we have decided to move the different departments to the Administration Building of the Hood Rubber Co. at Watertown, Massachusetts.

"The final result of this move is that the Hood Rubber Co., who, as you know, are the manufacturers of these goods, will, on August 1, 1912, take over and sell, bill, collect accounts and assume the business formerly done by the Shawmut Tire Co. All obligations of this company will be assumed by the Hood Rubber Co. All accounts due this company and all merchandise or property of this company will become the property of the Hood Rubber Co. After August 1, therefore, you will address all your communications, make all remittances and conduct your business with and in the name of the Hood Rubber Co., Watertown, Massachusetts."

TRADE NOTES.

The Hood Rubber Co., Boston, Massachusetts, has become a member of the Motor and Accessories Manufacturers' Association.

A. L. Devault has resigned from the United States Tire Co., with which he has been connected in Detroit, and has associated himself with the Federal Rubber Manufacturing Co., of Milwaukee, for which he will shortly open a Detroit branch.

The B. F. Goodrich Co. has declared an initial dividend of 1 per cent. on the common stock, payable August 15 to stock of record August 5.

William O. Porter tendered his resignation as president of the Intercontinental Rubber Co. on July 21 to accept the vice-presidency of the Guaranty Trust Co. Mr. Potter will serve as chairman of the board of directors of the Intercontinental company.

The general offices of the United States Tire Co. have been moved to the new United States Rubber building, Broadway and Fifty-eighth street, New York. This structure, the tallest north of Forty-second street, has recently been completed and will be utilized in future as the home of the United States Rubber Co. and its subsidiary companies. The building is twenty stories high. The United States Tire Co. will occupy the basement and subbasement as a stock room; the ground floor for its New York branch and the fifteenth, sixteenth and seventeenth floors as general offices. The company has over 400 employees in its general offices. The New York branch store will be moved into the new quarters about August 15.

TRADE NOTES.

The Great American Rubber Co., of Conshohocken, Pennsylvania, is making an automobile tire both in the regular clincher and quick detachable clincher type, which, according to the claims of the company, is cured in such a way that all possibility of undercuring or overcuring is eliminated. These tires are cured in molds so constructed that the rubber is everywhere equally exposed to the steam. They are made in sizes from 28 inches by 3 inches up to 37 inches by 5 inches.

The Bemis Rubber Co., Watertown, Massachusetts, is equipping a rubber reclaiming plant at that place.

The Fisk Rubber Co.'s new branch building in Pittsburgh is located in the very heart of the automobile district, at 5933 Baum street. It is two stories high, 95 feet long by 30 feet wide. It is finished in white tile front and yellow Tarentum brick on the sides. The name of the Fisk Rubber Co., in raised letters, extends across the front of the building between the second and third stories. Every facility for giving customers prompt and efficient service will be found in this finely-equipped building, and the brisk business that is being done is proof of the appreciation by tire users of the company's service.

The A. S. Brock Rubber Co., 120 Milk street, Boston, during the two years it has been located at that place, has built up a very satisfactory business in the jobbing of general rubber goods.

The "No-Stone-Bruise," a new type of Bailey Tread Tire, made by the Walpole Rubber Co., has proved exceedingly successful and already enjoys a wide popularity among users of tires.

The brokers who recently offered the 7 per cent. preferred stock of the Walpole Rubber Co., report that the entire issue was oversubscribed and that the common stock, which accompanied the preferred as a bonus, is selling at around 60.

The New York Stock Exchange has listed the following-named securities of the United States Rubber Co.: $175,000 of 8 per cent. non-cumulative first preferred stock, $35,000 of 7 per cent. non-cumulative second preferred stock and $1,334,000 common stock; also $5,000,000 common stock, on July 8 on notice of issue. This will make a total of $40,000,000 first preferred, $10,000,000 second preferred and $30,000,000 common stock to be listed.

The Alice and Millville mills of the Woonsocket Rubber Co. will be closed for two weeks, from August 2 to August 16. Superintendent Schlosser states that this vacation is for the purpose of giving the employes a much needed rest.

The Intercontinental Rubber Co. has issued a statement in which it brands as without foundation a report that the Madero interests have obtained control of the company. It says:

"There is going to be no change in the company's management for the present and nothing in the way of any change in the near future is even contemplated. We are on the best of terms with the Maderos and there is therefore no reason to believe that they would try to force us out now that they are in control of Mexico."

The two factories of the Boston Rubber Shoe Company, located at Edgeworth and Essex Falls, Massachusetts, will close down on the first of August for a two-weeks' vacation, the company utilizing the time for general repairs.

A FINE OPENING FOR SOME GOOD MEN.

A prominent New England rubber manufacturing company is looking around for salesmen for its mechanical rubber goods. It wants to cover New York and Pennsylvania, the South and the Pacific Coast. This offers a fine opportunity for three good men.

CAPT. APPLETON MEETS THE KING.

On July 11 a detachment of 50 members of the Ancient and Honorable Artillery Company of Boston arrived in London and was greeted at the railroad station by a band and a large escort of the Honorable Artillery Company of London, under the command of the Earl of Denbigh. The Ancients were vociferously cheered as they marched to their hotel. There a reception was held, the Earl of Denbigh making a short speech and Capt. Francis H. Appleton, commander of the Ancient Company, replying. On July 15 King George reviewed the distinguished Bostonians on the Buckingham Palace grounds, and had his photograph taken standing between the Stars and Stripes and the regimental colors of the Boston company. Capt. Appleton and the other officers were presented to King George and Queen Mary.

MR. DE LISSER WITH THE AJAX-GRIEB RUBBER CO.

Horace De Lisser has resigned his position as vice-president of the United States Motor Co. and become associated with the Ajax-Grieb Rubber Co. as chairman of the board of directors.

Mr. De Lisser has been with the Motor Co. since its organization, but in going to the Ajax-Grieb Co. he returns to the tire business, with which he was formerly connected. He sailed on July 30 on the "Kaiser Wilhelm Der Grosse," for the purpose of looking into the situation in Europe and with a view of erecting a plant on the Continent for the company's increasing foreign tire business.

MR. ASKAM WITH THE N. Y. RUBBER RECLAIMING CO.

It is anounced that William F. Askam, one of the oldest reclaimers in this line of business, has been secured by the New York Rubber Reclaiming Co., New York City, to act as superintendent of its plant. He expects very soon to be turning out his own well-known grades of shoddy, together with others intended to meet the special requirements of the insulating trade.

JOSEF SCHERER IN THE UNITED STATES.

Josef Scherer, a member of the American Association of Commerce and Trade, Berlin, recently arrived in this country for the purpose of making business connections for the distribution of American rubber shoes throughout the Continent. Mr. Scherer is managing director of B. Strassberg & Co., Limited, and also manager of the Austro-Hungarian Rubber Shoe Co., and Max Scherer & Co., of Vienna and Berlin.

PRESIDENT VAIL DONATES A LIBRARY.

President Theodore N. Vail, of the American Telegraph and Telephone Co., recently elected a director of the United States Rubber Co., has donated to the Massachusetts Institute of Technology a valuable technical library of 30,000 volumes on electricity and electrical engineering. This library was collected by the late George Edward Dering, of England, and is considered the most complete of its kind in existence. It is valued at $100,000.

PERSONAL MENTION.

Edgar E. Fay, sales manager of the Boston Woven Hose and Rubber Co., Cambridge, Massachusetts, started on Thursday, July 11, for a trip to the Pacific Coast, adding pleasure to business by a side trip of a few days at Yellowstone Park. Mr. Fay expects to be away from six to eight weeks and is looking forward with great pleasure to seeing business friends, whom it has not been his privilege to know personally.

Col. W. A. Roebling, Trenton, New Jersey, has made a large contribution of current books to the Public Library of the village of Roebling, New Jersey.

Benjamin F. Blye has resigned his position as assistant superintendent of the Stoughton Rubber Co., Canton, Massachusetts, after 20 years association with that company. He has accepted the position as general superintendent of the Walpole Rubber Co., Walpole, Massachusetts.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for five weeks, ending July 27:

COMMON STOCK, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]
Last Dividend (special), July 8, 1912—20%.

Week June 29	Sales 5,250 shares	High 66⅞	Low 64⅞
Week July 6	Sales 7,850 shares	High 67¾	Low 54¾
Week July 13	Sales 7,120 shares	High 54⅞	Low 50
Week July 20	Sales 4,600 shares	High 53¼	Low 50½
Week July 27	Sales 3,320 shares	High 53¼	Low 52¼

For the year—High, 67⅞, May 21; Low, 45¼, February 1.
Last year—High, 48½; Low, 30½.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, April 30, 1912—2%.

Week June 29	Sales 1,900 shares	High 110½	Low 108¾
Week July 6	Sales 2,800 shares	High 111½	Low 110
Week July 13	Sales 1,900 shares	High 110⅞	Low 108
Week July 20	Sales 2,100 shares	High 107¾	Low 106⅝
Week July 27	Sales 3,000 shares	High 107⅛	Low 105⅝

For the year—High, 116, May 20; Low, 105¾, July 25.
Last year—High, 115½; Low, 104.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, April 30, 1912—1½%.

Week June 29	Sales 400 shares	High 81	Low 80
Week July 6	Sales 200 shares	High 81½	Low 81½
Week July 13	Sales 400 shares	High 81	Low 81
Week July 20	Sales .... shares	High	Low ....
Week July 27	Sales .... shares	High	Low ....

For the year—High, 85½, May 21; Low, 75, January 23.
Last year—High, 79; Low, 66.

SIX PER CENT. TRUST GOLD BONDS, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week June 29	Sales 71 bonds	High 104⅝	Low 104¼
Week July 6	Sales 29 bonds	High 104½	Low 104¼
Week July 13	Sales 32 bonds	High 104½	Low 104⅜
Week July 20	Sales 33 bonds	High 104½	Low 104¼
Week July 27	Sales 24 bonds	High 104¼	Low 104

For the year—High, 105, February 24; Low, 103¾, January 6.
Last year—High, 105; Low, 101¾.

RIGHTS.

Week June 29	Sales 50 rights	High ½	Low ½
Week July 6	Sales 1,700 rights	High ¾	Low ¾
Week July 13	Sales 3,200 rights	High ⅝	Low ⅝
Week July 20	Sales .... rights	High ½	Low ½
Week July 27	Sales 3,080 rights	High ½	Low 7/16

For the year—High, —¾, June 19; Low, —7/16, July 26.

INDIA RUBBER GOODS IN COMMERCE.

EXPORTS FROM THE UNITED STATES.

OFFICIAL statement of values of exports of manufactures of india-rubber and gutta-percha for the month of May, 1912, and the first eleven months of five fiscal years, beginning July 1:

Months.	Belting, Packing and Hose.	Boots and Shoes.	All Other Rubber.	Total.
May, 1912	$218,179	$98,773	$722,586	$1,039,438
July-April	1,918,285	1,323,060	5,984,279	9,225,724
Total, 1911-12	$2,136,464	$1,421,833	$6,706,865	$10,265,162
Total, 1910-11	1,922,510	1,969,688	5,918,425	9,810,623
Total, 1909-10	1,754,082	1,792,691	4,622,560	8,169,333
Total, 1908-09	1,371,586	1,208,473	3,468,945	6,049,004
Total, 1907-08	1,225,618	1,486,959	3,443,465	6,156,042

The above heading, "All Other Rubber," for the month of May, 1912, and the last eleven months of two fiscal years, includes the following details relating to tires:

Months.	For Automobiles.	All Other.	Total.
May, 1912 Values	$272,317	$43,095	$315,412
July-April	2,063,603	467,290	2,530,893
Total, 1911-12	$2,335,920	$510,385	$2,846,305
Total, 1910-11	1,838,482	538,407	2,376,889

THE QUESTION OF GRAVITY IN RUBBER MANUFACTURE.

TO the Editor of THE INDIA RUBBER WORLD: Dear Sir—It is not my intention, or desire, to engage in a long drawn-out discussion, but I shall feel grateful to you for a few lines of your valued space to enable me to reply to the letter of W. T. Bonner in your last issue, criticising my article on "The Significance of Gravity in Rubber Manufacture," which appeared in the June issue.

Mr. Bonner has apparently failed to realize that my remarks were confined purely to the discussion of the interpretation of the gravity, not in manufactured articles, but in compounding ingredients such as shoddies, mineral filler, substitutes, etc. I purposely avoided discussing the significance of gravity in manufactured articles, wishing to confine myself entirely to the raw materials.

Mr. Bonner is undoubtedly correct in saying that the apparent gravity is an important consideration in manufactured articles, but his reasons for this statement are, to my mind, somewhat misleading. Except in a very few extreme cases, of which the manufacture of sponge stock is an example, it is always desirable that the manufactured article have a minimum of porosity. In other words, that the difference between the actual and apparent gravities be as small as possible. It is useless to try to control the uniformity of the manufactured articles from the determinations of *apparent* gravity, because variations in the *actual* gravity of the raw materials may compensate irregularities due to variations in the apparent gravity of the manufactured article. The result would be that although the apparent gravity would be constant, its porosity could vary. Of course, if in each case the actual gravity had also been taken, this variation would be observed, but this necessitates a full understanding of the relationship of actual and apparent gravity.

On the other hand, apparent gravity is of the greatest importance from the standpoint of a factory cost department. In this case actual gravity is irrelevant. For all goods that are sold by bulk or linear measure, the manufacturer is not interested in the weight per pound of his compound, but in the weight per unit of volume. This is a point which many manufacturers do not realize, yet it repeatedly happens that of two compounds, that one, the cost of which is higher, may be used more economically in goods that are sold by bulk; provided its gravity is lower. In figuring the price of goods sold by bulk, it is always necessary to have in mind, not the cost per pound, but the cost per cubic foot. This, of course, involves a knowledge of the gravity, obviously the apparent gravity and not the actual.

Yours very truly, L. E. WEBER.

Boston India Rubber Laboratory, July 9, 1912.

THE UNITED STATES TIRE COMPANY BUILDS IN BOSTON.

The United States Tire Co. is going to erect a substantial structure in Boston at the junction of Commonwealth avenue and Beacon street. The company hopes to have this building ready for occupancy by the beginning of the new year and intends, at that time, to move into it from its present location on Boylston street.

The building, which is to be of fireproof construction, will have five stories. The manager's office will occupy the street floor, along with the general salesroom. The main offices will be on the second floor, and the floors above will be devoted to stock. The truck tire department is to be located in the basement, and there also will be the service department of the branch. The service department will be conducted entirely separate from the sales department. The plans call for a driveway to the basement for the convenience of customers. This building will have one of the most prominent locations in the newer automobile district, facing the square, where Commonwealth and Brookline avenues and Beacon street come together.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JUNE 4, 1912.

NO. 1,028,109. Vehicle wheel-rim. J. E. Hale, assignor to The Goodyear Tire & Rubber Co.—both of Akron, Ohio.

1,028,141. Inflatable life-saving equipment for soldiers. E. W. Scowden, Jamestown, N. Y.

1,028,187. Hose coupling. C. E. Campbell, Portland, Ore., assignor to S. S. Keim, Newberg, Ore.

1,028,331. Vehicle tire. W. J. Cunningham, Philadelphia, Pa.

1028,334. Puncture-proof tire. M. De Viese, Fresno, Cal.

1,028,433. Marine life-saving jacket. W. Carroll, West Silverton, London, England.

1,028,490. Grip-tread and mud-shoe for automobiles. C. V. Pugh, St. Louis, Mo.

1,028,628. Tire-inflating apparatus. M. F. Stolberg, Toledo, Ohio.

1,028,676. Attachment for vehicle wheels. S. A. Cherry, Nashville, Tenn.

1,028,727. Vehicle wheel. F. Householder, Guthrie, Okla.

1,028,783. Motorcycle driving belt. C. T. L. von Radenau, Islington, England.

1,028,826. Bathing cap. T. W. Miller, assignor to The Faultless Rubber Co.—both of Akron, Ohio.

1,028,827. Insulated wire-saturating machine. P. A. Nehring, assignor to Nehring Insulated Wire & Mfg. Co.—both of Sycamore, Ill.

Trade Marks.

59290. Emil Rath, Frankfort-on-the-Main, Germany. The word *Infantibus.* For gutta percha and india rubber nipples.

61,628. Ashe, Noyes & Small Co., Auburn, Me. The word *Leprecaun.* For shoes, etc.

62,280. Samuel Buyer, New York. The monogram of S and B in a circle. For hose supporters, dress shields, etc.

ISSUED JUNE 11, 1912.

1,028,889. Spring-cushion tire for vehicle wheels. A. J. Layon, Lowell, Mass.

1,028,890. Medical inhaler. J. Leach, Blackburn, England.

1,028,908. Closure for weatherproof garments. L. T. Sawyer, Newton, Mass.

1,028,926. Non-inflammable lubricant and process of preparing the same. J. W. Aylsworth, East Orange, N. J.

1,029,027. Pneumatic tire protector. A. H. Rawitzer, Omaha, Neb.

1,029,110. Ventilating cushion for footwear. F. J. Drobinski, New York, assignor to Revere Rubber Co., Chelsea, Mass.

1,029,132. Overshoe for horses. H. Kassik, Yonkers, N. Y.

1,029,177. Spring wheel. W. T. Dulany, Jr., Arlington, N. J.

1,029,189. Window sash. W. S. Hamm, Hubbard Woods, Ill., assignor to The Adams & Westlake Co., Chicago, Ill.

1,029,215. Tire protector or shield. A. H. Morton, Cleveland, Ohio.

1,029,220. Removable heel. Frank Powyszenski, Chicago, Ill.

1,029,263. Vehicle tire. E. H. Bingham and T. Tominski, San Francisco, Cal.

1,029,299. Spring wheel. W. H. Howsley, Jr., Adams, Tenn.

1,029,307. Method of making pneumatic tire casings. N. W. McLeod, assignor to American Tire Co.—both of St. Louis, Mo.

1,029,323. Resilient vehicle wheel. H. J. Sheddy, Scranton, Pa.

1,029,340. Automatic tire pump. A. Brest, New Castle, Pa.

1,029,429. Spring hub. G. H. Davis, Advance, Mo.

1,029,553. Emergency tire. DeWitt Nelson, Minneapolis, Minn.

1,029,569. Vehicle tire. A. Kleinatland, assignor to Atlantic Punctureless Tire Co.—both of Paterson, N. J.

Trade Marks.

62,590. Empire Tire Co., Trenton, N. J. The word *Mikado.* For pneumatic tires.

62,868. Zimmerman & Zimmerman, Inc., Philadelphia, Pa. The words *Zee Zee,* with figure of Z between. For vehicle tires and tubes of rubber.

63,036. Mary E. Claflin, Philadelphia, Pa. The name *Waldo M. Claflin.* For boots and shoes.

62,265. I. B. Kleinert Rubber Co., New York. The word *Flexo* in double diamond. For dress shields.

ISSUED JUNE 18, 1912.

1,029,594. Horse boot or shoe. C. W. Conklin, Stony Brook, N. Y.

1,029,625. Pneumatic automobile wheel. O. C. Olney, Cincinnati, Ohio.

1,029,632. Vehicle wheel tire. W. W. Revell, Walden, N. Y.

1,029,633. Vehicle wheel. W. W. Revell, Walden, N. Y.

1,029,644. Pneumatic spring for vehicles. A. C. Vail, Selah, Wash.

1,029,652. Insulating material. J. H. White, Pittsburgh, Pa.

1,029,684. Vulcanizer. A. C. Hopkins and H. M. Morgan, Princeton, Ind.

1,029,689. Vaginal syringe. G. J. Kelly, Attleboro, Mass.

1,029,729. Life-saving device. R. Trevisan, Baltimore, Md.

1,029,772. Overshoe. W. N. Steuart, Brookfield, Ohio.

1,029,813. Nasal douche. J. E. MacWilliam, assignor to F. A. MacWilliam—both of Hubbardston, Mass.

1,029,819. Hose coupling. J. Nylander, Muskegon, Mich.

1,029,867. Spring wheel. F. Homolya, Kenosha, Wis.

1,029,909. Spray nozzle. E. C. Brown, Rochester, N. Y.

1,030,032. Tire-repair device. F. A. Strong, Bridgeport, Conn., assignor to Weed Chain Tire Grip Co., New York.

1,030,113. Detachable tread. O. Moore, Visalia, Cal.

1,030,119. Sprayer. J. Overbeke, Cleveland, Ohio.

1,030,137. Brush. H. B. Smith, Bayside, N. Y.

1,030,151. Hose clamp. F. H. Baldwin, Ticonderoga, N. Y.

1,030,168. Horseshoe. A. M. H. de Bruycker, New York.

1,030,199. Garden-hose reel. E. D. Merikle, Passaic, N. J.

1,030,227. Resilient wheel. W. Black, Mendota, Ill.

1,030,233. Spring tire for vehicles. S. R. Crews, Tampa, Fla.

1,030,263. Tire. S. A. Matarazzo. Wilmerding, Pa.

Designs.

42,645. Rubber bathing cap. R. Parker, New York, assignor to Parker, Stearns & Co., Brooklyn, N. Y.

42,646. Rubber bathing cap. E. M. Parker, New York, assignor to Parker, Stearns & Co., Brooklyn, N. Y.

Trade Marks.

52,587. N. B. Arnold, New York. The word *Slikup.* For coating rubber articles.

59,831. Calnon Asbestos & Rubber Works of America, New York. The word *Eternite.* For packing material made of compressed asbestos.

ISSUED JUNE 25, 1912.

1,030,314. Spring wheel. A. R. McEntire, Folsom, Ga.

1,030,348. Protective covering for pneumatic tired wheels. L. J. Tetlow, West Springfield, Mass.

1,030,537. Vehicle-tire. L. Quintal, Cleveland, Ohio.

1,030,651. Curing of india rubber. R. Derry, Singapore, Straits Settlements.

1,030,716. Detachable wheel rim. J. J. Burney, Shreveport, La.

Trade Marks.

53,461. Continental Caoutchouc & Gutta Percha Co., Hanover, Germany. The word *Continental.* For use in vessels for navigating the air.

59,184. Ogden, Merrill & Greer, St. Paul, Minn. The words *Mammoth Amazon.* For fruit-jar rings.

62,348. Brett Mfg. Co., New York. The word *Pyxol.* For use with detergents.

62,634. Robins Conveying Belt Co., Passaic, N. J. The word *Robins.* For conveyor belts, etc.

63,407. Prescott & Co., Boston, Mass. The word *Whalebone.* For rubber hose.

63,408. Prescott & Co., Boston, Mass. The words *Storm King.* For rubber hose.

63,711. Hood Rubber Co., Boston, Mass. The words *Royal Oak* under picture of oak tree in circle.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 5, 1912.]

3,249. Buoyant couches. B. de Milkos, Satoraljaujhely, Hungary.

3,294. Tire covers. J. N. Mollett, St. George's House, Eastcheap, London.

3,300. Fishing reels. F. and M. F. Baker, 28 Saint Paul's Square, Birmingham.

3,327. Rubberized measuring tapes. P. M. J. B. Feraud, 7 Rue du 29 Juillet, Paris.

3,342. Heels in layers of rubber and felt. A. Israelowitz, 20 Entegasse, and H. Wachtler, 27 Osterholzstrasse—both in Cassel, Germany.

3,359. Flesh brushes and soap dishes. H. Highwater, 24 Southwark street, London.

3,393. Bottle stoppers. E. G. Cheetham, 67 Eastgate, Louth, Lincolnshire.

3,440. Collapsible rubber ball for oil lamps. E. J. Godfrey, Severn Works, Gloucester.

*3,452. Hard rubber telephone switches. F. R. McBerty, New Rochelle, N. Y., U. S. A.

3,481. Rubber tubes for talking machines. L. Lumiere, 262 Cours Gambetta, Lyons, France.

3,514. Rubber washers in electric switches. L. Bonnet, 17 Rue des Orfèvres, Vienne, France.

3,522. Moulding golf balls. W. Robertson, 16 Stirling Road, Leith, Scotland.

3,563. Tire covers. A. Margetts, 56 Moorgate street, London.

3,602. Recovering volatile proofing liquids. S. C. Early, 119 Rue d'Isly, Boulogne, France; and A. G. Christiansen, 12 Barry Road, East Dulwich; and Farringdon Works and H. Pontifex & Sons, Shoe Lane—both in London.

*3,649. Apparatus for measuring electricity. E. Weintraub, Lynn, Mass., U. S. A.

3,677. Tire attachments to rims. W. T. Smith, 33 Hartington Road, Bolton.

3,761. Rubber-wound golf balls. C. H. Gray, of India-Rubber, Gutta-Percha and Telegraph Works Co., Silvertown, Essex.

3,789. Rubber washer in illuminated signs. H. Bey, Oxford street, London.

*3,807. Elastic fabric for garment supporters. C. J. White, New Britain, Conn., U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 12, 1912.]

3,898. Air tubes for tires. L. Brown and C. Macintosh & Co., Cambridge street, Manchester.

3,996. Electric conductors. H. Evans and St. Helens Cable & Rubber Co., Arpley, Warrington, Lancashire.

4,022. Golf balls. J. H. Roger, 11 South Exchange Place, Glasgow.

4,088. Air tubes for tires. O. T. Banks, 49 Mortimer street, Cavendish Square, London.

4,137. Tire jackets. B. Hüsing, Papenburg, Germany.

4,143. Air cushion for pumps. C. Evans, Whitby House, Vale View, Longport, and E. Johnson, 93 Hall street, Burslem—both in Staffordshire.

4,172. Improvements in cycle handles. C. P. Buch, 17 Sommervej, Charlottenlund, near Copenhagen.

4,177. Respirators. J. Harger, Grange Hollies, Gateacre, Lancashire.

4,199. Tread bands for tires. J. Briggs, Wyresdale, Hollings Hill, Esholt, Yorkshire.

4,208. Tread bands for tires. A. Whiteway and C. Macintosh & Co., Cambridge street, Manchester.

4,209. Improvements in tires. L. Brown and C. Macintosh & Co., Cambridge street, Manchester.

4,216. Heel protectors. A. T. W. Lendrum, 4 Carrigdown, Mardyke, Cork.

*4,291. Tread bands for tires. M. C. Overman, 391 West End avenue, New York, U. S. A.

4,399. Protective covers for tires. H. C. L. E. Brionne, 34 Rue Coquebert, Reims, Marne, France.

*4,470. Repairing tires. G. J. Martel, 5458 Michigan avenue, Chicago, Ill., U. S. A.

4,471. Repairing tires. G. J. Martel, 5458 Michigan avenue, Chicago, Ill., U. S. A.

4,474. Rubber support in hat boxes. E. Giese, 2 Freystrasse, Königsberg, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 19, 1912.]

*4,587. Tread bands for tires. T. F. Baldwin, 106 West 31st street, New York, U. S. A.

4,710. Tire jackets and covers. H. Panzetta, Carrara, Redhill, Surrey, and W. Truscott, 334 Euston Road, London.

4,721. Block tires of compressed felt. H. Knock, Hirschberg-on-Saale, and Filzfabrik Adlershof, Akt. Ges. Adlershof, near Berlin—both in Germany.

4,743. Devulcanizing waste rubber. C. Blair, 148 Wellington Road North, Heaton Norris, Stockport.

4,820. Air tubes for tires. G. H. N. Howes, 30 Willis street, Norwich.

4,892. Rings for pipe joints. F. J. W. Barnes, Floral Villa, Broad Gate, Beeston, Nottingham.

4,946. Non-refillable bottles. W. Burdekin, 139 Boundary Road; J. Smart, 30 Hanover street; M. S. Brown, 69a Wilson street, and J. Ashcroft, Grove House, Raverhead—all in St. Helens.

*5,020. Detachable rubber heels. C. H. Chapman, 52 Highland avenue, Winchester, Mass., U. S. A.

*5,034. Pneumatic cushions in spring wheels. E. S. Shanklin, Oakland, Cal., U. S. A.

5,036. Knitted fabric containing rubber for tires and balloon envelopes. E. C. R. Marks, 57 Lincoln's Inn Fields, London.

5,053. Tire attachments to rims. H. Büssing, 40 Elmstrasse, Brunswick, Germany.

5,058. Pneumatic cushion for vehicle wheels. A. Perrin, Rhode End, Paddock Wood, Kent.

5,069. Detachable rim attachments to wheels. E. W. Thomas, 48 Chatsworth Road, Luton, Bedfordshire.

5,094. Use of rubber in looms. J. P. Smith and J. T. Nuttall, Park Mill, Sedgwick street, Preston, Lancashire.

5,109. Pneumatic cushion for vehicle wheels. I. Henson, Holly Bank, Quarndon Bank, Quarndon, Derbyshire.

5,133. Hand shields for brushes. W. J. Alder, 54 Ashvale Road, Tooting, London.

5,192. Rubber rollers for moulding dough. F. Hengler, 63 Oppumerstrasse, and F. Cronenmeyer, 24 Crefelderstrasse—both in Crefeld, Germany.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JUNE 26, 1912.]

5,258. Rubber macerating or sheeting machines. E. Stephenson, 4 The Broadway, Westminster.

5,270. Pneumatic rings and cushions for wheels. R. V. Wagner, 34 Gray's Inn Road, Holborn, London.

5,331. Tire attachments to rims. E. Owen, Back Madoc street, Llandudno, Carnarvonshire.

5,349. Regenerating india-rubber. R. G. East, Manaton, Sherwood Road, Wimbledon, London.

5,351. Rubber tires. R. G. East, Manaton, Sherwood Road, Wimbleton, London.

5,381. Improvements in tires. A. E. Wale, 39 Alcester Road, Moseley, Birmingham.

5,395. Artificial rubber from seaweed. J. S. Campbell, 57 South street, Isleworth, Middlesex.

5,396. Artificial leather from seaweed. J. S. Campbell, 57 South street, Isleworth, Middlesex.

5,398. Protectors for rubber soles and heels. W. H. Bell, 66 Margaret street, Cavendish Square, London.

5,494. Protectors for boots and tires. C. Michel and B. Fäh, Grenchen, Solothurn, Switzerland.

5,581. Improvements in golf balls. Dunlop Rubber Co., and J. V. Worthington, Manor Mills, Salford street, Aston, Birmingham.

5,712. Plastic filler for rubber. T. D. Kelly, 9 Avenue Road, Southend.

5,803. Tobacco pouches. A. E. Bishop, 20 Gordon avenue, St. Margarets, Twickenham.

5,817. Improvements in vehicle wheels. M. Binnes, 95 Bellott street, Cheetham, and H. Bewick, 120 Herbert street, Hightown—both in Manchester.

5,851. Pneumatic cushions for wheels. D. J. Lonek, Wildenschwert-Hilbetten, Bohemia.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

437,305 (November 8, 1911). J. C. Beeker. Interchangeable boot heel.

437,320 (November 16). F. C. Leger. Rubber stamp for commercial uses.

437,337 (November 20). R. Desavisse. Pneumatic safety wheel.

437,338 (November 22). E. M. Beyon. System of attaching wheels and movable rims.

437,386. (December 8). A. H. Shoemaker. Improvements in pneumatic tires.

437,422 (February 16). J. Gautier. Improvements in pneumatic tires.

437,463 (December 12). P. Orange. Improvements in manufacture of rods or tubes for mounting artificial flowers.

437,547 (October 24). F. E. Matthews and E. H. Strange. Improvements in manufacture of synthetic rubber.

437,562 (November 14). E. Dankmann. Rubber tires for automobiles and other vehicles.

437,572 (November 17). Goussard. Improvements in rims and elastic tires for automobiles and other vehicles.

437,683 (December 17). T. H. Quigg. Vehicle tires.

437,691 (December 15). D. Ponchana. Protective leather cover for pneumatic tires.

437,789 (December 18). E. A. H. de Poortere. Description of solid or hollow tire, to replace pneumatic tires for automobiles and other vehicles.

437,847 (December 15). Kettler, Eilers & Hinnich. Device for repairing the air chambers of damaged pneumatic tires.

437,887 (December 19). E. W. Baker. Elastic block rubber tires for automobiles and other vehicles.

437,933 (December 20). A. C. Backus. Improvements in pneumatic tires.

437,974 (December 21). E. Aimend. Rubber tire and device for attachment to wheel.

438,683 (November 11). R. A. Moore. Antiskid device for automobiles and other vehicles.

438,119 (December 5). J. W. and G. F. Burgess. Improvements in tires.

438,197 (December 23). G. H. Price. New composition for automatically stopping perforations in pneumatic tires.

438,204 (March 8). M. Guillot and H. Jambon. Elastiic non-pneumatic tires for vehicle wheels.

438,219 (December 26). H. Dagny and V. Henri. Wainscoted air chamber and process of manufacture.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Robet, Ingénieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

248,484 (August 30, 1910). Naamlooze Vennootschap Hollandsche Proteine-Maatschappy, Amsterdam. Production of plastic masses for carbohydrates and alkali albuminates.

248,516 (November 26, 1909). Alfred Whiteway and Charles Macintosh & Co., Manchester. Pneumatic tires with protective layer.

248,926 (October 29, 1911). Mathilde Jankau, Pfanegg bei München. Bandage.

249,120 (December 2, 1911). Christian Hamilton Gray, Silvertown, Essex, England. Production of golf balls with core soft or fluid at normal temperature.

249,022 (May 14, 1911). Robinson Brothers, Ltd., West Birmingham, England. Spray mouthpiece.

249,200 (August 25, 1911). Gustav Brockhaus, Unna, Westphalia. Feeding bottle stopper with ventilation.

THE KINGDOM OF BELGIUM.

PATENTS PUBLISHED.

243,238 (1912.) Farbenfabriken vorm. F. Bayer & Co., Elberfeld, Germany. Process of production of rubber, its homologues and analogues.

243,792 (1912). H. Fix, Metzingen, Germany. Process of preparation of substance replacing hard rubber.

243,824 (1912). E. H. Grenet, avenue de Gambetta, Saintes, France. Rubber valve.

243,826 (1912). Bourne Rubber Co., Ltd., London. Treatment of rubber in manufacturing certain articles.

242,973 (1912). M. A. Nolan, 557 Ronde street, St. Paul, U. S. A. Improvements in rubber heels.

243,182 (1912). Farbenfabriken vorm. F. Bayer & Co., Elberfeld, Germany. Process for production of pinacone.

243,933 (1912). J. Blum-Sutton, Rue St. Boniface, 7, Brussels. Production of vulcanized rubber at ordinary temperature.

244,174 (1912). Farbenfabriken vorm. F. Bayer & Co., Elberfeld, Germany. Process for preventing the glutination and resinification of substances resembling rubber.

Review of the Crude Rubber Market.

THE London figure of 4s. 9d. for fine Pará, recorded at the period of last report (as compared with 4s. 11d. a fortnight earlier), formed the keynote of values during the earlier part of July. On 11th an improvement was developed, which by degrees carried the price to 4s. 11½d. by 22d. The 5/. mark was crossed on the 25th, when the price went to 5/0½; subsequently receding on the 26th (at time of writng) to 4/11¾.

A quiet but steady market characterized the earlier part of the month of July; among the principal objects of attention being the various statistical returns to June 30. In this connection special interest attached to the return of the crop of Pará rubber for the year ending June 30 last; the quantity having been 39,585 tons, as compared with 37,662 tons for the year 1910-11, and 39,240 tons for 1909-10. The steadiness in price recorded in spite of this record yield, has been attributed to the report that large quantities of rubber are held back at interior points, owing to the low water in the Amazon river. Another factor, contributing to firmness, has been the large reduction in the total visible supply on July 1, as compared with last year; the figures (including Caucho) being respectively 6,370 and 10,950 tons, the falling off being thus 4,580 tons. This difference practically represents a reduction of 3,730 tons in the English stock and of 520 tons in the Pará holdings of the syndicate; the latter standing on July 1, 1912, at 2,240 tons, as compared with 2,760 tons on July 1, 1911.

The disturbance of London business in plantation rubber through the dock strike, is shown by the falling off in quantities auctioned. At the 12 series of auctions, which took place during the first five months of this year, a total of 6,996 tons was offered, while the four series of June and July only included about 1,600 tons. The average reduction for June and July has thus equaled about 30 per cent.

At the London plantation rubber auction commencing July 2, the offerings amounted to 570 tons, nearly all sold at previous rates to 1d. decline. Demand was brisk, and it was considered that the trade could have taken double the quantity offered. The auction of the 16th included 625 tons, which were disposed of at practically unchanged prices. The local position in London will now be relieved by the cessation of the strike, which, after having lasted ten weeks, was called off on the 27th, according to cable reports.

Forward business has been transacted to a relatively satisfactory extent by plantation companies; sales for 1913 delivery having been made at 4s. 3½d. at end of June, and at 4s. 5d. at the middle of July.

At the Rotterdam auction of July 5, there were about 39 tons offered, chiefly of Congo, *Hevea*, and *Ficus* descriptions. Competition was good; the whole quantity being sold. Prices in general about reached valuations, but Congos showed a fall of about 6 per cent.

The Amsterdam auction of June 21 was relatively satisfactory to holders. Of 47½ tons, 44 tons were sold; at about valuations for *Hevea* and *Castilloa* descriptions, while *Ficus* fell off about 3 per cent.

Owing to the hesitancy of buyers, only about half of the 62 tons offered for sale at Havre on June 27, was sold; the average decline representing about 4 per cent.

Similar features marked the Antwerp sale of June 25, amounting to 471 tons, of which 328 tons were sold; the sales including 238 tons Congo and 83 tons plantation rubber. The average fall in value was about 3¼ per cent.; plantation alone showing a drop of only about 1 per cent. Cable advices regarding the Antwerp sale of July 24 report the prices realized as being 5 per cent. higher than valuations. The quantity offered was 280 tons.

The earlier part of July was marked by quiet steadiness in the New York market; buyers being still more or less reserved in their action; while the latter part of the month reflected the firmness and advancing tendency of the London market; the relative slowness of demand being offset by the disinclination to force sales.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago and July—the current date.

PARA.	Aug. 1, '11.	July 1, '12.	July 30, '12.
Islands, fine, new	104@105	100@101	107@108
Islands, fine, old	...@107	.....	109@110
Upriver, fine, new	114@115	110@111	117@118
Upriver, fine, old	118@119	115@116	122@123
Islands, coarse, new	61@ 62	54@ 55	56@ 57
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	95@ 96	84@ 85	90@ 91
Upriver, coarse, old	.....	.....	.....
Cametá	67@ 68	63@ 64	65@ 66
Caucho (Peruvian) ball	96@ 97	82@ 83	88@ 89
Caucho (Peruvian) sheet	.....	.....	76@ 77
PLANTATION PARA.			
Fine smoked sheet	133@134	118@119	120@121
Fine pale crepe	132@133	117@118	121@122
Fine sheets and biscuits	131@132	113@114	117@118
CENTRALS.			
Esmeralda, sausage	84@ 85	82@ 83	83@ 84
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	84@ 85	80@ 81	81@ 82
Panama	.....	.....	.....
Mexican, plantation, sheet	.....	90@ 95	.....
Mexican, scrap	83@ 84	80@ 81	81@ 82
Mexican, slab	.....	.....	.....
Mangabeira, sheet	.....	.....	.....
Guayule	43@ 44	55@ 56	57@...
Balata, sheet	84@ 85	85@ 86	.....
Balata, block	63@ 65	53@ 54	.....
AFRICAN.			
Lopori, ball, prime	108@109	.....	108@109
Lopori, strip, prime	.....	.....	.....
Aruwimi	103@104	.....	103@104
Upper Congo, ball, red	105@106	.....	105@106
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	95@ 96	94@ 95	95@ 96
Massai, red	98@ 99	95@ 96	98@ 99
Soudan, Niggers	.....	.....	.....
Cameroon, ball	.....	65@ 66	.....
Benguela	.....	.....	.....
Madagascar, pinky	.....	85@ 86	.....
Accra, flake	27@...	27@ 28	27@...
EAST INDIAN.			
Assam	81@ 82	.....	.....
Pontianak	6@6½	5⅞@ 6	6@6½
Borneo	.....	.....	.....

Late Pará cables quote:

	Per Kilo.		Per Kilo.
Islands, fine	4$625	Upriver, fine	....
Islands, coarse	2$250	Upriver, coarse	....
		Exchange	16 7/32d.

Latest Manáos advices:

Upriver, fine	6$150	Exchange	16 7/32d.
Upriver, coarse	4$150		

Amsterdam.

JOOSTEN & JANSSEN report [June 21]:

Today's sale was satisfactory, although results were somewhat irregular, in consequence of the weakness reported from London. Of the 47½ tons offered, 44 tons were sold. *Hevea* and *Castilloa* descriptions realized about the valuations, while *Ficus* qualities dropped 3 per cent.

Rotterdam.

HAVELAAR & DE VRIES report [July 8]:

Offerings in sale of 5th included 17½ tons Congo, 11½ tons *Hevea* and 9 tons *Ficus*, which were practically all sold. Competition was good. Prices, with exception of *Hevea* and *Castilloa*, were nearly all below valuations. Congos showed a fall of 6 per cent. and *Ficus* 2 per cent.

Statistics of Para Rubber (Excluding Caucho).

	New York. Fine and Medium.	Coarse.	Total, 1912.	Total, 1911.	Total, 1910.
Stocks, May 31.....*tons*	163	18 = 181	351	106
Arrivals, June	794	555 = 1,349	1,501	401
Aggregating	957	573 = 1,530	1,852	507
Deliveries, June	804	550 = 1,354	1,479	346
Stocks, June 30	153	23 = 176	373	161

	Pará. 1912.	1911.	1910.	England. 1912.	1911.	1910.
Stocks, May 31....*tons*	2,995	4,205	675	730	1,925	1,550
Arrivals June	1,950	1,090	945	443	179	662
Aggregating	4,945	5,295	1,620	1,173	2,104	2,212
Deliveries, June	2,260	1,510	1,320	483	329	752
Stocks, June 30	2,685	3,785	300	690	1,775	1,460

	1912.	1911.	1910.
World's visible supply, June 30.....*tons*	4,680	6,564	2,665
Pará receipts, July 1 to June 30.....	32,330	30,290	31,515
Pará receipts of caucho, same dates.....	7,390	7,330	7,740
Afloat from Pará to United States, June 30	279	226	199
Afloat from Pará to Europe, June 30.....	850	405	545

Rubber Stock at Para.

Stock for January 31 showed an increase caused by heavier arrivals, while that of February 29 shows a slight decrease. The stock of March 31 displayed a further reduction, while that of April 30 was about the same as a month earlier. On May 31 the stock had again increased, but had receded by June 30.

January 31, 1911....*tons*	2,085	October 31, 1911....*tons*	3,320
February 28	3,787	November 30	3,050
March 31	4,214	December 31	2,675
April 30	5,104	January 31, 1912.....	3,370
May 31	5,350	February 29	3,240
June 30	4,545	March 31	2,730
July 31	3,884	April 30	2,770
August 31	3,450	May 31	2,995
September 30	3,102	June 30	2,685

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York) advises as follows: "During July the demand for commercial paper has continued very good, both from city and out-of-town banks, but principally out-to-town, the best rubber names ruling at 4@4½ per cent., and those not so well known 5½@5¾ per cent., rates the latter part of the month being rather higher than the first part."

NEW YORK PRICES FOR JUNE (NEW RUBBER).

	1912.	1911.	1910.
Upriver, fine	$1.08@1.12	$0.95@1.03	$2.23@2.45
Upriver, coarse	.86@ .91	.81@ .85	1.50@1.63
Islands, fine	1.01@1.06	.91@ .98	2.13@2.30
Islands, coarse	.55@ .59	.58@ .63	.93@1.05
Cametá	.63@ .65	.67@ .71	1.10@1.25

African Rubbers.

NEW YORK STOCKS (IN TONS).

June 1, 1911	90	January 1, 1912	58
July 1	90	February 1	150
August 1	90	March 1	90
September 1	112	April 1	80
October 1	67	May 1	62
November 1	45	June 1	91
December 1	60	July 1	62

WEEKLY MOVEMENT OF LONDON PRICES.

[IN SHILLINGS AND PENCE PER POUND.]

July 7, 1911	4/2½	January 19, 1912	4/5½
July 14	4/5½	January 26	4/8
July 21	4/7	February 2	4/7
July 28	4/8	February 9	4/6½
August 4	4/7½	February 16	4/6¾
August 11	4/7½	February 23	4/7½
August 18	4/7½	March 1	4/7½
August 25	4/10½	March 8	4/9
September 1	4/8½	March 15	4/10½
September 8	4/9	March 22	5/1½
September 15	5/	March 29	4/11½
September 22	4/10½	April 5	4/11
September 29	4/8	April 12	4/11
October 6	4/7	April 19	4/10¼
October 13	4/5	April 25	4/9
October 20	4/6½	May 3	4/7½
October 27	4/4	May 10	4/7½
November 3	4/3	May 17	4/7½
November 10	4/4½	May 24	4/7½
November 17	4/3	May 31	4/7½
November 24	4/3½	June 7	4/8½
December 1	4/4½	June 14	4/10
December 8	4/5½	June 21	4/9½
December 15	4/4½	June 28	4/7½
December 22	4/4	July 5	4/9
December 29	4/3½	July 12	4/10
January 5, 1912	4/4½	July 19	4/10
January 12	4/5½	July 26	4/11¼

Liverpool.

WILLIAM WRIGHT & Co. report [July 1]:

Fine Pará.—Owing to labor troubles in London, which naturally affected trade deliveries, combined with some shortage for June delivery, prices during the early part of the month for spot and near delivery advanced from 4*s.* 8*d.* [$1.14] to 4*s.* 10¼*d.* [$1.19], but have since reacted to 4*s.* 9*d.* [$1.16] sellers, closing with sellers Upriver, Fine, 4*s.* 9*d.* [$1.19]; Island, 4*s.* 2½*d.* [$1.02]. Naturally forward positions benefited by spot values, although a fairly liberal discount was accepted for distant deliveries. There must still be a considerable accumulation of supplies of plantation grades in London, and once the strike is over we look for a reaction in prices, but we think a drop in values of 2*d.* to 3*d.* per pound would mean a resumption of active trade demand, and we would counsel manufacturers to take, at any rate, some advantage of any such decline.

IMPORTS FROM PARA AT NEW YORK.

[*The Figures Indicate Weight in Pounds.*]

JULY 5.—By the steamer *Pancras* from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss.....	83,000	19,000	157,000	13,700=	272,700
Meyer & Brown.....	59,300	5,200	38,600	40,700=	143,800
Henderson & Korn.....	25,200	8,800	31,000	28,200=	93,200
New York Commercial Co..	16,900	5,000	40,600	30,400=	92,900
General Rubber Co.....	35,200	.....	3,900	2,000=	41,100
De Lagotellerie & Co.....	12,100	1,800	13,800	.....=	27,700
Robinson & Co.....	12,100	.....	7,200	.....=	19,300
Total	243,800	39,800	292,100	115,000=	690,700

JULY 18.—By the steamer *Basil* from Manáos and Pará:

Arnold & Zeiss.....	347,300	74,500	188,400	50,200=	660,400
Meyer & Brown	57,900	9,600	18,000	43,900=	129,400
New York Commercial Co..	54,200	16,500	22,200	1,700=	94,600
Henderson & Korn.....	38,000	14,100	15,300	1,000=	68,400
General Rubber Co.....	28,500	200	26,800	.....=	55,500
Robinson & Co.....	12,400	7,400	11,200	12,900=	43,900
De Lagotellerie & Co.....	12,100	3,200	13,900	.....=	29,200
Crossman & Sielcken.....	.....	.....	3,300	500=	3,800
Hagemeyer & Brunn.....	.....	.....	16,800	.....=	16,800
Total	550,400	125,500	315,900	110,200=	1,102,000

JULY 4.—By the steamer *Christopher* from Manáos and Pará:

Arnold & Zeiss.....	83,100	21,900	56,800	16,900=	178,700
New York Commercial Co..	51,700	20,100	22,400	.....=	94,200
Meyer & Brown.....	15,100	2,200	12,700	3,500=	33,500
De Lagotellerie & Co.....	13,900	700	15,800	.....=	30,400
General Rubber Co.....	.....	.....	29,700	.....=	29,700
Henderson & Korn.....	4,600	.....	5,300	.....=	9,900
G. Amsinck & Co.....	4,000	.....	3,300	500=	7,800
Robinson & Co.....	1,400	300	5,300	.....=	7,000
Cerqueira Pinta	4,700	.....	.....	.....=	4,700
Total	178,500	45,200	151,300	20,900=	395,900

PARA RUBBER VIA EUROPE.

POUNDS.

JUNE 26.—By the *Cincinnati*=Hamburg:
Rubber Trading Co. (Fine) 7,000

JUNE 26.—By the *Coppename*=Bahia:
General Export Co. (Fine) 3,000
General Export Co. (Coarse) 15,000 18,000

JULY 1.—By the *Pennsylvania*=Hamburg:
Ed. Maurer (Fine) 34,000

JULY 2.—By the *Grenada*=Bolivar:
Yglesias, Lobo & Co. (Fine) 10,000
Yglesias, Lobo & Co (Coarse) ... 15,000 25,000

JULY 8.—By the *Cedric*=Liverpool:
Robinson & Co. (Fine) 5,500
General Rubber Co. (Coarse) ... 13,500 19,000

JULY 9.—By the *Amerika*=Hamburg:
Ed. Maurer (Fine) 15,000

JULY 9.—By the *Colon*=Colon:
W. R. Grace & Co. (Fine) 10,000
W. R. Grace & Co. (Caucho) ... 15,000 25,000

JULY 8.—By the *Bermuda*=Hamburg:
New York Commercial Co. (Fine) 8,000

JULY 9.—By the *Saramaca*=Bolivar:
Yglesias, Lobo & Co. (Fine) 6,500
Yglesias, Lobo & Co. (Coarse) .. 1,500
American Trading Co. (Fine) ... 1,000
American Trading Co. (Coarse) . 1,000 10,000

JULY 10.—By the *President Lincoln*=Hamburg:
Ed. Maurer (Fine) 25,000

JULY 12.—By the *Lusitania*=Liverpool:
Arnold & Zeiss (Coarse) 22,500

JULY 15.—By the *Mayaro*=Bolivar:
General Export Co. (Fine) 17,500
General Export Co. (Coarse) 9,000 26,500

JULY 15.—By the *Celtic*=Liverpool:
Robinson & Co. (Fine) 28,000

JULY 16.—By the *Cleveland*=Hamburg:
Wallace L. Gough Co. (Fine) 11,000

JULY 16.—By the *Advance*=Mollendo:
New York Commercial Co. (Fine) 4,000

JULY 19.—By the *Mauretania*=Liverpool:
N. Y. Commercial Co. (Fine) ... 135,000
N. Y. Commercial Co. (Coarse) . 34,000
Robinson & Co. (Coarse) 7,000
Arnold & Zeiss (Fine) 11,000 187,000

JULY 19.—By the *Adriatic*=Liverpool:
Arnold & Zeiss (Caucho) 90,000

JULY 22.—By the *Panama*=Mollendo:
W. R. Grace & Co. (Coarse) 1,500
W. R. Grace & Co. (Fine) 6,000 7,500

JULY 22.—By the *Kaiserin Auguste Victoria*=Hamburg:
N. Y. Commercial Co. (Fine) .. 15,000
Raw Products Co. (Fine) 2,000 17,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

POUNDS.

JUNE 25.—By the *Joachim*—Colon:
G. Amsinck & Co. 5,500
J. Sambrada & Co. 1,000
Gillespie Bros. & Co. 1,000
I. Brandon & Bros. 1,000 8,500

JUNE 27.—By the *Thespis*=Bahia:
J. H. Rossbach & Bros. 69,000

JUNE 27.—By the *Panama*=Colon.
G. Amsinck & Co. 7,000
W. R. Grace & Co. 4,000
I. Brandon & Bros. 1,500
George A. Alden & Co. 1,500
M. J. Baconte 1,000 15,000

JULY 1.—By the *Matanzas*=Tampico:
Ed. Maurer *235,000
New York Commercial Co. *110,000
H. Marquardt & Co. *10,000
In transit *36,000 *391,000

JULY 1.—By the *Esperanza*=Frontera:
Meyer & Brown 5,000
W. P. Bainbright Co. 3,000
E. Steiger & Co. 2,000
German-American Coffee Co. 1,000
H. Marquardt & Co. 1,000
J. W. Wilson & Co. 1,000
Herman Kluge 1,000
Silva, Bussenius & Co. 1,000
For Glasgow 10,000 25,000

JULY 3.—By the *Magdelena*=Colombia:
Maitland, Coppell & Co. 9,000
G. Amsinck & Co. 7,000
A. M. Capen's Sons 4,000
J. Sambrada & Co. 1,000
I. Brandon & Bros. 1,000
For London 6,000 28,000

JULY 3.—By the *Verdi*=Bahia:
A. Hirsch & Co. 20,000
A. D. Hitch & Co. 11,000 31,000

JULY 5.—By the *Alliance*=Colon:
G. Amsinck & Co. 6,000
Piza Nephews Co. 2,000
Pablo Calvert & Co. 1,500
Wessels, Kulenkampff & Co. 1,500
A. Rosenthal & Sons 1,500
Lanman & Kemp 1,500
I. H. Thompson 1,000
R. G. Barthold 1,000 16,000

JULY 6.—By the *Morro Castle*=Frontera:
E. Steiger & Co. 4,500
H. Marquardt & Co. 4,000
American Trading Co. 1,500
Willard Hawes & Co. 1,500
Harburger & Stack 1,000
For London 5,500 18,000

JULY 8.—By the *Santiago*=Tampico:
New York Commercial Co. *67,000
Ed. Maurer *45,000
Arnold & Zeiss *25,000
In transit *9,000 *146,000

JULY 9.—By the *Colon*=Colon:
G. Amsinck & Co. 4,500
A. Rosenthal & Sons 3,500
Wessels, Kulenkampff & Co. 3,000
Maitland, Coppell & Co. 2,000
J. Sambrada & Co. 1,500 14,500

JULY 10.—By the *Prinz August Wilhelm*=Colon:
G. Amsinck & Co. 3,000
I. Brandon & Bros. 1,500
Mecke & Co. 1,500
Graham, Hinkley & Co. 1,500
Suzarte & Whitney 1,000 8,500

JULY 11.—By the *Matoppo*=Colombia:
B. Williamson & Co. 7,000
Roldau & Van Sickle 2,000 9,000

JULY 12.—By the *Monterey*=Frontera:
Lawrence Johnson & Co. 4,500
E. Steiger & Co. 2,000
Harburger & Stack 1,500
For Havre 5,000 13,000

JULY 13.—By the *Comus*=New Orleans:
Manhattan Rubber Mfg. Co. 5,000
Robinson & Co. 3,000
Eggers & Heinlein 2,500 10,500

JULY 13.—By *El Oriente*=Galveston:
Continental-Mexican Rubber Co. . *45,000
Charles T. Wilson *6,000 *51,000

JULY 16.—By the *Cleveland*=Hamburg:
Ed. Maurer *7,000

JULY 19.—By *El Cid*=Galveston:
Continental-Mexican Rubber Co. *155,000

JULY 20.—By the *Mexico*=Vera Cruz:
H. Marquardt & Co. 3,500
Lawrence Johnson & Co. 2,500
Maitland, Coppell & Co. 2,000
Graham, Hinkley & Co. 1,000 9,000

JULY 22.—By the *Kaiserin Auguste Victoria*=Hamburg:
New York Commercial Co. *30,000
Ed. Maurer *4,500 *34,500

JULY 22.—By the *Panama*=Colon:
G. Amsinck & Co. 7,000
I. Brandon & Bros. 3,500
Mecke & Co. 2,000
Gillespie Bros. & Co. 1,500
Wessels, Kulenkampff & Co. 2,000
Suzarte & Whitney 1,000 17,000

AFRICAN.

POUNDS.

JUNE 26.—By the *Cincinnati*=Hamburg:
Meyer & Brown 36,500
General Rubber Co. 17,000
Raw Products Co. 2,500 56,000

JUNE 27.—By the *California*=Havre:
Meyer & Brown 17,000

JUNE 27.—By the *Coronia*=Liverpool:
Wallace L. Gough Co. 7,000
James T. Johnstone 7,000
George A. Alden & Co. 1,000 15,000

JUNE 27.—By the *Zeeland*=Antwerp:
Henderson & Korn 5,500

JUNE 29.—By the *Baltic*=Liverpool:
Meyer & Brown 11,000
J. T. Johnstone 2,000
General Rubber Co. 2,000 15,000

JULY 1.—By the *Philadelphia*=London:
George A. Alden & Co. 33,500

JULY 5.—By the *Madonna*=Lisbon:
Ed. Maurer 22,500
Wallace L. Gough Co. 11,000 33,500

JULY 8.—By the *Amerika*=Hamburg:
Meyer & Brown 27,000
Arnold & Zeiss 29,000
Ed. Maurer 11,000
General Rubber Co. 3,500
A. W. Brunn 2,000 72,500

JULY 8.—By the *Lapland*=Antwerp:
Arnold & Zeiss 45,000
Wallace L. Gough Co. 9,000
Muller, Schall & Co. 7,000
Rubber Trading Co. 9,000 70,000

JULY 8.—By the *Bermuda*=Hamburg:
Ed. Maurer 22,500
Rubber Trading Co. 17,000
Henderson & Korn 10,000
Meyer & Brown 9,000
George A. Alden & Co. 6,000
Robert Badenhop 3,500 68,000

JULY 11.—By the *Majestic*=London:
George A. Alden & Co. 15,000

JULY 10.—By the *President Lincoln*=Hamburg:
Meyer & Brown 45,000
General Rubber Co. 13,500
Ed. Maurer 8,000
Arnold & Zeiss 6,000
Henderson & Korn 3,500 76,000

JULY 13.—By the *Celtic*=Liverpool:
Arnold & Zeiss 11,500
George A. Alden & Co. 15,500
James T. Johnstone 9,000
Charles T. Wilson 2,000 38,000

JULY 15.—By the *New York*=London:
Arnold & Zeiss 18,000
Rubber Trading Co. 13,500
Charles T. Wilson 2,500 34,000

JULY 16.—By the *Cleveland*=Hamburg:
Ed. Maurer 30,000
Meyer & Brown 18,000
George A. Alden & Co. 10,000
Robert Badenhop 8,000
Henderson & Korn 6,000 72,000

JULY 19.—By the *Adriatic*=Liverpool:
Arnold & Zeiss 56,000
Rubber Trading Co. 2,500 58,500

JULY 22.—By the *St. Paul*=London:
James T. Johnstone 10,000
George A. Alden & Co. 8,500
Charles T. Wilson 5,500 24,000

JULY 22.—By the *Kaiserin Auguste Victoria*=Hamburg:
Ed. Maurer 34,000
Meyer & Brown 34,000
General Rubber Co. 25,000
Arnold & Zeiss 20,000
Wallace L. Gough Co. 13,500 126,500

JULY 24.—By the *Zeeland*=Antwerp:
Meyer & Brown 4,500
Henderson & Korn 5,500 10,000

EAST INDIAN.

(*Denotes plantation rubber.)

POUNDS.

JUNE 27.—By the *Coronia*=Liverpool:
W. H. Stiles & Co. *9,000
Ed. Maurer *9,000
Charles T. Wilson *13,500
General Rubber Co. *7,000 *38,500

JUNE 27.—By the *Zeeland*=Antwerp:
Meyer & Brown *11,500

JULY 1.—By the *Philadelphia*=London:
Ed. Maurer *40,000
Arnold & Zeiss *15,000
Charles T. Wilson *9,000
New York Commercial Co. *7,000
Henderson & Korn *8,000
Muller, Schall & Co. *7,000 *86,000

JULY 3.—By the *Olympic*=London:

New York Commercial Co.	*34,000	
Arnold & Zeiss	*30,000	
In transit	*25,000	*89,000

JULY 8.—By the *Cedric*=Liverpool:

Ed. Maurer		*15,000

JULY 8.—By the *St. Louis*=London:

New York Commercial Co.	*105,000	
Arnold & Zeiss	*34,000	
James T. Johnstone	*11,000	*150,000

JULY 8.—By the *Lapland*=Antwerp:

Meyer & Brown	*75,000	
New York Commercial Co.	*11,000	
Rubber Trading Co.	*10,000	
Wallace L. Gough & Co.	*6,000	*102,000

JULY 10.—By the *Crostafels*=Colombo:

Meyer & Brown	*60,000	
New York Commercial Co.	*13,500	
Ed. Maurer	*11,000	
Muller-Schall & Co.	*3,000	*87,500

JULY 10.—By the *Amsterdam*=Rotterdam:

Meyer & Brown	*15,000	
Rubber Trading Co.	*7,000	
Ed. Maurer	*5,000	
Otto Isenstein & Co.	7,000	34,000

JULY 11.—By the *Majestic*=London:

Charles T. Wilson	*29,000	
Ed. Maurer	*13,500	
In transit	*35,000	*77,500

JULY 16.—By the *Matoppo*=Singapore:

Ed. Maurer	*34,000	
New York Commercial Co.	*15,000	
L. Littlejohn & Co.	*11,500	
A. W. Brunn	*5,500	
Wallace L. Gough Co.	*5,000	
L. Littlejohn & Co.	25,000	
Haebler & Co.	7,000	
Arnold & Zeiss	11,500	114,500

JULY 16.—By the *Kroonland*=Antwerp:

Meyer & Brown		*55,000

JULY 17.—By the *Oceanic*=London:

New York Commercial Co.	*155,000	
Arnold & Zeiss	*45,000	
James T. Johnstone	*34,000	
Charles T. Wilson	*15,000	
Meyer & Brown	*11,000	
In transit	*45,000	
Arnold & Zeiss	*30,000	*335,000

JULY 19.—By the *Mauretania*=Liverpool:

General Rubber Co.		*22,500

JULY 22.—By the *Birkenfels*=Colombo:

Meyer & Brown	*70,000	
H. W. Peabody & Co.	*9,000	
Robert Badenhop	*5,000	
New York Commercial Co.	*3,500	
General Rubber Co.	*30,000	*117,500

JULY 22.—By the *St. Paul*=London:

New York Commercial Co.	*45,000	
Meyer & Brown	*35,000	
Arnold & Zeiss	*45,000	
Charles T. Wilson	*5,000	*130,000

JULY 24.—By the *Zeeland*=Antwerp:

Arnold & Zeiss	*65,000	
Meyer & Brown	*7,000	
Henderson & Korn	*5,000	*77,000

GUTTA-JELUTONG.

JULY 16.—By the *Matoppo*=Singapore:

	Pounds.	
L. Littlejohn & Co.	800,000	
George A. Alden & Co.	650,000	
Wallace L. Gough Co.	350,000	
Haebler & Co.	400,000	
W. R. Russell & Co.	55,000	
Arnold & Zeiss	55,000	2,310,000

GUTTA-PERCHA.

	Pounds.	
JUNE 26.—By the *Cincinnati*=Hamburg:		
Robert Soltau & Co.		8,000
JULY 16.—By the *Matoppo*=Singapore:		
L. Littlejohn & Co.	45,000	
Arnold & Zeiss	5,000	50,000
JULY 22.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Robert Soltau & Co.		8,000

BALATA.

	Pounds.	
JULY 17.—By the *Marowijne*=Demerara:		
Middleton & Co.	5,500	
George A. Alden & Co.	1,500	
Gillespie Bros. & Co.	1,500	8,500

BOSTON ARRIVALS.

	Pounds.	
MAY 1.—By the *Waldersee*=Hamburg:		
George A. Alden & Co. (African)		4,400
MAY 1.—By the *Lancastrian*=London:		
Wallace L. Gough Co. (African)		6,700
MAY 3.—By the *Karonga*=Singapore:		
State Rubber Co. (East Indian)	*17,500	
L. Littlejohn & Co. (Jelutong)	285,000	
State Rubber Co. (Jelutong)	50,000	352,500
MAY 21.—By the *Jeserie*=Singapore:		
State Rubber Co. (East Indian)	*13,500	
L. Littlejohn & Co. (Jelutong)	620,000	
State Rubber Co. (Jelutong)	85,000	718,500
MAY 24.—By the *Indrasamha*=Singapore:		
Wallace L. Gough Co. (Jelutong)		110,000
JUNE 1.—By the *Anglian*=London:		
Wallace L. Gough Co. (African)		4,500
JUNE 5.—By the *Kaloma*=Singapore:		
State Rubber Co. (East Indian)	*6,500	
L. Littlejohn & Co. (Jelutong)	625,000	
George A. Alden & Co. (Jelutong)	56,000	
Wallace L. Gough Co. (Jelutong)	34,000	721,500
JUNE 8.—By the *Burmese Prince*=Singapore:		
State Rubber Co. (East Indian)	*30,000	
State Rubber Co. (Gutta-Percha)	22,500	
L. Littlejohn & Co. (Jelutong)	1,170,000	1,222,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JUNE, 1912.

Imports:	Pounds.	Value.
India-rubber	6,711,234	$5,312,943
Balata	8,636	5,320
Guayule	792,215	359,216
Gutta-percha	20,186	16,761
Gutta-jelutong (Pontianak)	1,436,535	63,783
Total	8,968,806	$5,758,023
Exports:		
India-rubber	53,551	$46,797
Balata	.....	.....
Guayule	.....	.....
Gutta-percha	.....	.....
Reclaimed rubber	50,077	9,290
Rubber scrap, imported	1,710,836	$136,935
Rubber scrap, exported	389,417	61,092

EXPORTS OF INDIA-RUBBER FROM PARA FOR THE FIRST SIX MONTHS OF 1912 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	Total Exported.	Stock in Pará on June 30, 1912.	GRAND TOTAL.
Zarges, Berringer & Co.—Pará	786,229	262,762	1,371,088	582,972	3,003,051	1,412,143	128,620	182,419	461,943	2,177,125	5,180,176	160,000	5,340,176
Ad. H. Alden, Ltd.	311,335	69,598	437,188	281,159	1,099,280	772,023	100,188	325,066	157,999	1,355,276	2,454,556	39,000	2,493,556
General Rubber Co. of Brazil	578,163	79,492	397,849	207,446	1,262,950	167,218	23,131	82,979	141,032	414,360	1,677,310	32,000	1,709,310
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	672,346	17,362	75,774	240,986	1,006,468	1,006,468	77,000	1,083,468
R. O. Ahlers & Co. (*)	191,913	19,838	91,604	135,502	438,857	206,936	3,974	53,312	82,139	346,361	785,218	65,000	850,218
De Lagotellerie & Co.	66,300	17,510	150,480	.....	234,290	79,050	686	30,020	6,930	116,686	350,976	22,000	372,976
M. Ulmann & Co.	.....	.....	.....	.....	.....	17,009	1,064	18,527	171,920	208,520	208,520	.....	208,520
Pires Teixeira & Co.	75,136	6,832	59,100	16,616	157,684	16,150	1,020	15,840	.....	33,010	190,694	.....	190,694
Nunes Sobrinho & Co.	12,580	3,060	22,440	4,240	42,320	38,360	3,104	6,576	734	48,774	91,094	.....	91,094
Sundry exporters	26,405	1,757	33,765	6,052	67,979	3,508	203	10,964	1,260	15,935	83,914	.....	83,914
	2,048,061	460,849	2,563,514	1,233,987	6,306,411	3,384,743	271,352	801,477	1,264,943	5,722,515	12,028,926	395,000	12,423,926
Itacoatiara, direct	.....	.....	.....	.....	.....	31,240	4,531	21,369	9,505	66,645	66,645	.....	66,645
Manáos, direct	2,328,389	602,180	991,687	797,425	4,719,681	2,444,496	412,573	514,629	1,361,710	4,733,408	9,453,089	.....	9,453,089
Iquitos, direct	32,782	1,103	7,369	39,811	81,065	390,647	56,144	141,778	679,965	1,268,534	1,349,599	.....	1,349,599
Stock in first hands in Pará	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	412,000	412,000
Stock held by Syndicate J. Marques	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2,240,000	2,240,000
	4,409,232	1,064,132	3,562,570	2,071,223	11,107,157	6,251,126	744,600	1,479,253	3,316,123	11,791,102	22,898,259	3,047,000	25,945,259

(*) Included in these figures are about 460 tons Bolivian Rubber and Caucho in transit; the balance is own export.

MANAOS EXPORTS OF INDIA-RUBBER FOR FIRST SIX MONTHS OF 1912 (IN KILOGRAMS).

EXPORTERS.	NEW YORK. Fine.	Medium.	Coarse.	Caucho.	Total.	EUROPE. Fine.	Medium.	Coarse.	Caucho.	Total.	GRAND TOTAL. Kilos.	Stock. Tons.	GRAND TOTAL. Kilos.
Zarges, Ohliger & Ca.	924,351	173,766	368,855	263,719	1,730,691	1,339,974	120,045	115,528	610,657	2,186,204	3,916,895	112	4,028,895
Adelbert H. Alden, Ltd.	733,800	237,872	293,356	331,352	1,596,380	405,096	133,576	136,168	230,708	905,548	2,501,928	5	2,506,928
General Rubber Co. of Brazil	640,452	181,185	255,580	109,851	1,187,068	199,426	68,967	53,994	332,701	655,088	1,842,156	11	1,853,156
Ahlers & Ca.	192,140	39,393	86,782	71,121	389,436	283,568	38,612	83,243	178,695	584,118	973,554	...	973,554
De Lagotellerie & Co.	.....	.....	.....	.....	.....	120,712	36,676	60,219	65,711	283,318	283,318	5	288,318
J. G. Araujo	.....	.....	7,200	7,200	14,400	191	2,625	43,575	150	46,581	60,941	...	60,941
W. Peters & Co.	.....	.....	.....	37,542	37,542	2,153	939	12,317	4,365	19,774	57,346	...	57,346
Semper & Co.	.....	.....	.....	.....	.....	42,944	4,303	7,942	.....	55,189	55,189	...	55,189
Various	.....	.....	.....	.....	.....	7,276	3,207	10,575	5,239	26,297	26,297	...	26,297
	2,490,743	632,216	1,011,773	820,815	4,955,547	2,401,340	408,950	523,561	1,428,226	4,762,077	9,717,624	133	9,850,624
Iquitos, direct	32,782	1,103	7,369	39,811	81,065	390,647	56,144	141,778	679,965	1,268,534	1,349,599	...	1,349,599
Total	2,523,525	633,319	1,019,142	860,626	5,036,612	2,791,987	465,094	665,339	2,108,191	6,030,611	11,067,223	133	11,200,223

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Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	August 1.
Old rubber boots and shoes—domestic	9.05@ 9⅛
Old rubber boots and shoes—foreign	9 @ 9⅛
Pneumatic bicycle tires	4½@ 4¾
Automobile tires	9⅛@ 9¼
Solid rubber wagon and carriage tires	9¼@ 9¾
White trimmed rubber	11 @11½
Heavy black rubber	4¾@ 5
Air brake hose	5⅛@ 5¼
Garden hose	1½@ 1⅝
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

Antwerp.

RUBBER STATISTICS FOR JUNE.

DETAILS.	1912.	1911.	1910.	1909.	1908.
Stocks, May 31...*kilos*	444,437	614,010	543,863	689,238	771,577
Arrivals in June—					
Congo sorts	174,315	382,972	356,288	273,079	397,745
Other sorts	10,529	11,860	29,384	120,864	48,614
Plantation sorts	97,942	32,160	39,929	36,131	14,704
Aggregating	727,223	1,041,002	969,464	1,119,312	1,232,640
Sales in June	384,032	267,025	508,947	642,892	547,774
Stocks, June 30	343,191	773,977	460,517	476,420	684,866
Arrivals since Jan. 1—					
Congo sorts	1,417,416	1,642,593	1,655,626	1,716,209	2,257,536
Other sorts	69,166	246,953	167,522	554,564	285,105
Plantation sorts	612,634	331,476	262,060	132,731	63,184
Aggregating	2,099,216	2,221,022	2,085,208	2,403,504	2,605,825
Sales since Jan. 1	2,430,563	2,035,257	2,166,203	2,522,819	2,927,853

RUBBER ARRIVALS FROM THE CONGO.

JULY 2.—By the steamer *Leopoldville*:

		Kilos.	
Bunge & Co.	(Société Générale Africaine)	21,300	
do	(Chemins de fer Grands Lacs)	5,900	
do	(Cie. du Kasai)	34,000	
do	(Comptoir Commercial Congolais)	4,600	
Société Coloniale Anversoise	(Haut Congo)	2,150	
L. & W. Van de Velde	(Comfina)	4,400	
do	(Comminière)	4,900	
do	(Velde)	3,400	
Charles Dethier	(American Congo Co.)	5,600	
Comp. d'Irebu		850	
Cassart & Henrion		700	87,800

Plantation Rubber from the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to June 24, 1911 and 1912. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain ..... *pounds.*	1,190,006	2,725,552
To United States	845,941	1,630,163
To Belgium	174,888	514,004
To Australia	16,714	69,010
To Germany	8,590	60,407
To Canada	9,971	16,065
To Austria	.....	12,563
To Japan	20,556	8,315
To Italy	3,597	5,885
To Holland	100	2,282
To Norway & Sweden	.....	39
To France	117	.....
To India	85	.....
Total	2,270,565	5,044,285

[Same period 1910—1,087,620 pounds; same 1909—497,677].

TOTAL EXPORTS FROM MALAYA.

[From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.]

To.	Singapore. June 11.	Penang. May 26.	Port Swettenham. May 31.	Total. 1912.
Great Britain...*pounds*	4,091,730	3,095,808	6,717,541	13,905,079
Continent	99,635	23,067	893,100	1,015,802
Japan	144,389	.....	.....	144,389
Australia	21,329	.....	.....	21,329
Ceylon	.....	92,884	396,692	489,576
United States	952,162	.....	.....	952,162
Total	5,309,245	3,211,759	8,007,333	16,528,337
Same period, 1911	2,421,941	1,764,641	4,836,703	9,023,285
Same period, 1910	1,220,057	807,433	3,135,944	5,163,434
Same period, 1909	1,079,664	1,223,361	.....	2,303,025

1912.

1908.
771,577

397,745
48,614
14,704

,232,640
547,774

684,866

,257,536
285,105
63,184

,605,825

,927,853

87,800

Ceylon

912.
25,552
30,163
4,004
9,010
0,407
6,065
2,563
8,315
5,885
2,282
39
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4,285
7].

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